# Space Systems
# Roles and Missions Study Group

## Final Report


21 January 1994

**UNITED STATES SPACE COMMAND**

21 JAN 1994

FROM: USCINCSPACE
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SUBJ: Space Systems Roles and Missions Study Group Final Report

TO: Director, The Joint Staff
Washington, DC 20318-0300

1. As directed by the Secretary of Defense and the Director of the Joint Staff, United States Space Command, with representatives from all the Services, The Defense Information Systems Agency (DISA), and The Joint Staff, has completed an in-depth examination of the possible designation of AFSPACECOM as the primary agent for design, launch, and operation of satellites.

2. Finding that AFSPACECOM (USAF) was the primary agent for design, launch, and operation of space systems, the study group concluded there was no compelling reason to designate AFSPACECOM (USAF) as the "sole" agent. However, they did recommend changes, that if implemented, have the potential to conserve resources, prevent future unnecessary redundancies, maintain Service representation in the components, and improve support to the warfighter.

3. I concur with the findings and recommendations and have taken action to implement those recommendations which apply to USSPACECOM. The results of this study are hereby approved for distribution and action as determined appropriate by the Joint Staff and the Secretary of Defense.

4. Points of contact at this headquarters are COL Ross/LTC DeWitt, DSN 692-5900.

CHARLES A. HORNER
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## TABLE OF CONTENTS

# EXECUTIVE SUMMARY

1. **Purpose and Background**. The 1993 CJCS Roles and Missions Report proposed several initiatives to consolidate and reorganize the U. S. military. In March 1993, SECDEF returned the report to CJCS for further action. CJCS, in turn, directed USCINCSPACE to evaluate one of the initiatives: the ***possible designation of Air Force Space Command as the primary agent for design, launch, and operation of satellites.*** This report documents USCINCSPACE findings on that initiative.

2. **Guidance and Assumptions**. The overall Roles and Missions discussions are taking place in an environment of declining budgets, differing views on how U. S. forces should be organized to best carry out future military strategy, and a strong desire to eliminate unnecessary redundancy, increase efficiency, and improve support to the warfighter. With these objectives in mind, certain guidance was given, decisions were made, and factors were considered which bounded or otherwise affected evaluation of the specific initiative:

a. SECDEF directed that we "...ensure that all interested Services retain representation in the space component." (SECDEF letter, 15 Apr 93.)

b. The Joint Staff directed that our evaluation not address compartmented (black) space systems.

c. In view of the fact the Air Force is already the dominant service in space, and after consultation with officials involved in the Roles and Missions study at OSD, it was determined that the term primary agent for space was intended to mean sole agent, and that the term satellites meant space systems.

d. Two possible time frames for implementation were considered during the USCINCSPACE review: the near term transfer of systems being operated by other Services to the Air Force, and a longer term implementation by directing that future systems be developed and operated exclusively by the Air Force.

e. Two important trends were considered during the USCINCSPACE review of this question. First, the likelihood DoD and Civil space programs will converge to some degree (weather satellite systems, for example) which could mean that future space systems with military applications might be developed by civilian agencies. Second, a growing recognition that the U. S. has a crisis in space launch, with the associated possibility that the solution to the launch problem may involve some form of partnership among the military, civil, and commercial sectors.

f. The evaluation group determined it was not bounded by a simple "yes or no" answer to this initiative and examined other related options.

g. The Joint Staff directed that the report be coordinated with the Services.

Detailed study guidelines are delineated in the Terms of Reference (Appendix A) which was coordinated with the Services by the Joint Staff.

3. Key Definitions. To ensure a common frame of reference existed for this evaluation, a set of definitions was adopted. These definitions for design, launch, space operations, payload control, bus control, system manager, system operational manager, and space systems can be found in Appendix B.

4. Methodology. An evaluation group was formed and chaired by USSPACECOM. It consisted of representatives from all Services, DISA, and the Joint Staff. The study group received briefings from affected agencies and commands, established a sub-panel to examine savings potential, and deliberated over a six-month period. Each proposal was measured against four criteria. Does the proposal:

a. Save resources (manpower, dollars, etc.)?

b. Eliminate unnecessary redundancies?

c. Maintain Joint/Service space expertise and operational focus?

d. Improve support to combatant commanders?

5. Primary Conclusion. The Air Force is currently the predominant space service employing approximately 97% of the personnel, funding approximately 75% of the TOA for non-NRO space systems, and directing 87% of R&D investment. A premise implied in the initial proposal is that consolidation exclusively under the Air Force would result in better organization for warfare and resource savings. While there may be savings through consolidation of similar missions and functions, the evaluation group could not support the premise, nor did it find significant unnecessary redundancies. Of equal importance in forming the conclusion is that space has become an essential enhancement to warfighting for all services. Each service must be extensively involved in military space programs in order to continue developing better systems and operational applications. For these reasons, ***while the Air Force is currently the primary agent for design, launch, and operation of space systems, it should not be designated the sole agent.***

6. Related Proposals. In the course of considering the primary question, several excursions were also considered. These variations were examined against the same general criteria and include transferring all space systems to AFSPACECOM except a portion of the Defense Satellite Communications System (DSCS) and the Kwajalein radars, centralizing MILSATCOM management under USSPACECOM and its components, and centralizing MILSATCOM management under DISA. The results can be found in Appendix C. The Cost Sub-Group Report is also at Appendix C.

7. Findings. There are five major findings.

a. Finding 1. *The Study Group found no compelling arguments to designate the Air Force as the sole agent for design[1], launch, and operation of space systems and a strong argument against such a decision.* (Appendix D, Annex 1)

b. Finding 2. *Space provides essential support for all services and CINCs; single Service consolidation would jeopardize Joint Service/Agency expertise and representation.* (Appendix D, Annex 2)

c. Finding 3. *Space launch is a significant problem, but is currently being addressed under the Office of Science and Technology Policy Launch Study and the DoD Space Launch Modernization Plan.* USSPACECOM review found that, with the possibility of an impending convergence of military, civil, and civilian space programs, it is premature to make a recommendation concerning launch. (Appendix D, Annex 3)

d. Finding 4. *A single, central point for space systems operational management is needed.* (Appendix D, Annex 4)

e. Finding 5. *There are deficiencies in the application of space systems in the support of warfighters.* (Appendix D, Annex 5)

8. Recommendations. Although not specifically requested, the deliberations of the evaluation group led to eight recommendations:

a. Recommendation 1. *Continue space system R&D at the Joint labs in the direction established by Project Reliance.* The Joint Service cooperative space system lab R&D programs appear to be working well under DoD's Project Reliance. Project Reliance is the joint lab system that fosters interaction among the laboratories and contributes to the definition of joint requirements of combatant forces. The one current exception to this integration is some space systems' R&D under the Army's Space and Strategic Defense Command. The Army should integrate its total space R&D program into the joint lab system.

b. Recommendation 2. *The current process of requirements definition and concept development for space systems requires improvement to ensure greater Joint and Service influence in decision-making.* These functions are a natural outgrowth of Service and CINC responsibilities in determining what is needed to prosecute their warfighting and training missions. However, with increasing budget pressures and dramatically different post-Cold War strategies, it is essential for all Services to better understand the costs and benefits of requirements. Further, important new defense space capabilities are under the management of separate Agencies and not within normal Service/component channels. This could lead to the development and fielding of systems which do not have capabilities deemed essential by combatant commanders and their components. Further normalization of the Service-component-combatant command relationship for space

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1 "Design" encompasses system technical requirements definition, technical specifications, research and development, and acquisition for bus and payload

forces is essential.

c. Recommendation 3. *Space acquisition should be done in jointly manned System Program Offices (SPO) within the Air Force acquisition system.* The Air Force is the lead service for acquisition in a majority of current and programmed DoD (non-NRO) space systems. It is essential, however, that all Services and Agencies with approved requirements have significant involvement in program management to ensure adequate representation of those requirements throughout the development process. With the possibility of converging military and civilian space programs (at least in some areas) integrated DoD representation will be more important. Codification of Service participation in jointly manned SPOs would help ensure adequate participation and help normalize space system acquisition. This recommendation should not prohibit a Service from pursuing a space program which supports its warfighters in cases where the Air Force cannot satisfy those Service needs.

d. Recommendation 4. *Merge space system bus operations into a common satellite control network. This should be done as soon as possible, but not later than 1999.* The primary goal is for a single entity to integrate all bus operations. When TRANSIT is inactivated in 1996, the Navy's GFO satellite would be the only satellite bus that the Air Force's common user Satellite Control Network (AFSCN) may not be able to control. The GFO is compatible with the AFSCN, however, the AFSCN may not meet all Navy control requirements until 1998-99 if current plans for AFSCN upgrades remain on schedule. Merging the AFSCN and Navy control network during the 1996-99 period has the potential to achieve improvements in efficiency and effectiveness, while assuring maximum support for the combatant commanders. It should be noted however, that there could be exceptions to using a common satellite control network (e.g. for small tactical satellites which may be developed in the future where it may not be operationally or economically feasible to integrate these systems into the common satellite control network). (See also Paragraph 9. below)

e. Recommendation 5. *Multi-Spectral Imagery (MSI) systems operations should come to USSPACECOM for delegation to a component.* Recognizing there are uncertainties in this program, should an MSI program continue and its operations be a DoD responsibility, USSPACECOM, as operator of all other DoD operational space systems, is the logical choice to operate MSI systems. USSPACECOM operation would preclude setting up a duplicative operational process and would ensure efficiency and responsiveness to combatant commands.

f. Recommendation 6. *The current operating Kwajalein sensors should remain with USARSPACE.* Army operation of Kwajalein sensors is working well. There is no duplication with other space operations and the main mission of these sensors is Research and Development. In addition, there were no resource savings or value added associated with transferring these operations, or the operation of the Navy Space Surveillance Network, to the Air Force. (See also Paragraph 9. below)

g. Recommendation 7. *Assign combatant command authority over all defense*

*space systems to USCINCSPACE (USCINCSPACE to assign operational control of all forces to component commands).*

1) **Consolidate payload operations under USSPACECOM.** Currently, DSCS is the only non-Black space system whose payload is not under USSPACECOM; the Air Force Consolidated Space Operations Center and the Navy NAVSOC currently control all non-Black DOD payloads. USARSPACE has the capability to control the DSCS III payload. Future satellites employing on-board processing will facilitate use by warfighting CINCs, but current and projected use requires centralized direction of payload operations. USSPACECOM has a separate initiative under way to resolve this issue.

2) **Consolidate space systems operational management under USSPACECOM.** System operational management for DSCS is also handled differently than other non-black space systems. Consolidation is consistent with the USCINCSPACE's Title 10 and Unified Command Plan (UCP) responsibilities, and will conserve resources while providing improved support to Unified Commands.

h. Recommendation 8. *The Joint Staff should review the System Manager designation for Defense Satellite Communications System (DSCS) (currently DISA).* System managers exercise authority over the long range planning, direction, and functions necessary for support of weapons systems. Consolidating this function under USCINCSPACE will eliminate the stovepipe management structure for this system and allow a system of systems approach for military satellite communications. It also resolves conflicts with COCOM/OPCON responsibilities over a vital space system.

9. <u>USSPACECOM Initiatives</u>. In addition to recommending the preceding actions, and as a result of this study, USSPACECOM will:

a. Conduct a study of merging the AFSCN and NSCN to determine the most efficient and cost effective solution.

b. Conduct an analysis of space surveillance to determine required force structure.

c. Lead an effort to develop a strengthened Joint space "road map" to guide new space systems and concepts of operation.

d. Actively support Component efforts in exploiting space systems in support of warfighters (e.g., space warfare centers).

10. <u>Dissenting Positions</u>. As might have been expected, service representatives on the evaluation group did not agree on every finding. Dissenting opinions can be found in Annex E.

REPORT

1. Purpose and Background. The CJCS 1993 Roles and Missions (R&M) Report emphasized the need to consolidate and reorganize to eliminate unnecessary duplication. It identified several initiatives. On 29 March 1993, SECDEF directed a "fast track" study to report findings on one of these initiatives: the proposed merger of USSTRATCOM and USSPACECOM, and ***possible designation of AFSPACECOM as the primary agent for design, launch, and operation of satellites.*** The highlighted statement was the purpose of this study.

2. Guidance and Assumptions. The study was conducted in accordance with the following: 1) SECDEF instructions to "...ensure that all interested Services retain representation in the space component.", 2) the Joint Staff instruction to not address "black" systems, 3) the study group assumed the intent of the R&M assessment process is to identify opportunities to eliminate unnecessary redundancy, improve efficiency, and improve support to the warfighter, and 4) the study group assumed it was not bounded to an "all or nothing" solution to this tasking. Detailed study guidelines are further delineated in the Terms of Reference (TOR) which was coordinated by the Joint Staff with the Services (Appendix A.)

3. Key Definitions. To ensure a common baseline for evaluation, a set of definitions was adopted. The definitions for design, launch, space operations, payload control, bus control, system manager (SM), system operational manager (SOM), and space systems can be found at Appendix B.

4. Measures of Merit. To help guide the overall assessment of the proposals, four measures of merit were identified: does it conserve overall resources (manpower, dollars, etc.); does it eliminate unnecessary redundancies; does it maintain Joint/Service space expertise and operational focus; and, does it improve support to combatant commanders? (Appendix C)

5. Procedures.

a. The study group, chaired by USSPACECOM, consisted of representatives from all Services, the Defense Information Systems Agency (DISA), and The Joint Staff. The study group received briefings from affected agencies and commands, established a sub-panel to examine resource savings potential, and deliberated over a 6-month period. Five different proposals were examined during this study:

(1) Transfer all space systems to AFSPACECOM.

(2) Transfer all space systems to AFSPACECOM except a portion of the Defense Satellite Communications System (DSCS.)

(3) Centralize MILSATCOM management under USSPACECOM, with the components supporting as directed.

(4) Centralize MILSATCOM management under DISA.

(5) Maintain status quo.

b. The Study Group consensus of discussions comparing these proposals with the measures of merit can be found in the chart at Appendix C. The Cost Sub-Group Report is also at Appendix C.

c. The report was coordinated with the representatives through several iterations prior to this final edition.

d. After coordination with the representatives, selected members of the USSPACECOM staff reviewed the report. Taking into consideration events that had transpired over the period of the study group deliberations, the staff considered two general time frames for implementation: the near term transfer of existing systems to the Air Force, and a longer term objective of directing that only future systems be developed and operated exclusively by the Air Force. Further, two important trends were considered during the USCINCSPACE review of this study: the likelihood DoD and Civil space programs will converge to some larger degree (weather satellite systems, for example); and a growing recognition that the U. S. has a crisis in space launch capability -- with the associated possibility that the solution to this problem may involve some form of future launch partnership among the military, civil, and commercial sectors.

6. Primary Conclusion. The Air Force is currently the predominant space service employing approximately 97% of the personnel, funding approximately 75% of the TOA for non-NRO space systems, and directing 87% of R&D investment. A premise implied in the initial proposal is that consolidation exclusively under the Air Force would result in better organization for warfare and resource savings. While intuitively there maybe some savings through consolidation of similar missions and functions, the evaluation group could not agree on any appreciable savings to support the premise, nor did it find significant unnecessary redundancies, particularly in the short term. Of equal importance in forming the conclusion is that space has become an essential enhancement to warfighting for all services. Each service must be extensively involved in military space programs in order to continue developing better systems and operational applications. For these reasons, **while the Air Force is currently the primary agent for design, launch, and operation of space systems, it should not be designated the sole agent.** However, the findings listed below and their supporting rationale (see discussion in the appendix for each

finding) lead to recommendations that, if implemented, have the potential to conserve overall resources, prevent future unnecessary redundancies, maintain Service representation in the components, and improve support to the warfighter.

7. Background. To set the stage for the discussions and to provide a better understanding of the findings and recommendations, a review of the current conditions relative to the design, launch, and operation of space systems is required.

a. An essential function of the Services is to equip forces. Currently each Service does that through their own acquisition organization. If successful, the program continues through various stages until fielded. Funding for the program is generated by the Service through the Planning, Programming, and Budgeting System (PPBS). For all major systems, the interface between the PPBS and the weapons acquisition process is achieved by designated membership of the Defense Systems Acquisition Review Council (DSARC) and the Defense Resources Board (DRB), and the requirement to develop an acquisition strategy. For non-major systems, The Service is responsible for the funding and acquisition process. For space systems, the process is divided into design, launch (if a satellite) or fielding (if a surface-based sensor), and operation.

b. Design - Design encompasses system technical requirements definition, technical specifications, research and development, and acquisition.

(1) The requirements process usually begins with an acknowledgement of a deficiency (identified by the Service, a Unified Command, etc.) culminating in a Mission Needs Statement (MNS). The MNS is then validated by the Service and/or the Joint Requirements Oversight Council (JROC) for Major Defense Acquisition Programs (MDAP) and approved by the Service Acquisition Council or Board (Defense Acquisition Board for MDAPs) for concept development. To respond to mission needs (which have to be satisfied by materiel solutions), the Services conduct studies to determine alternative materiel solutions. These studies are formally initiated by a Milestone 0 approval decision by the Service/JROC and result in the concept definition, development of performance objectives, and formulation of an operational requirements document (ORD). If a space system concept appears to be a viable alternative, it becomes a competitor in this process. The Services develop their space system operational concepts and requirements both individually and jointly. However, normally there is interservice coordination on space systems operational requirements definition.

(2) The second part of the design process is the development of technical requirements and specifications. These are a series of documents that result from needs and requirements expressed in the MNS and ORD. They are the guidelines for the engineers responsible for building the system and its components. It is essential that the user is involved in this process of interpreting the MNS and

ORD requirements to create the technical requirements and specifications to ensure the final product meets the user's needs and eliminates the deficiency. If the technologies, etc., exist to fulfill those technical requirements and specifications, the process continues. Sometimes research and development is needed to fill holes generated by those technical requirements and specifications. The formal start of a new acquisition program begins when the concept is approved for demonstration (Milestone 1). Each service has program management personnel responsible for this process, but the actual interpretation may be done by either Service or contractor personnel. For space systems, the Air Force uses a combination of Service and contractor personnel, while the other Services normally use contractors, using Service personnel to oversee and evaluate the resultant product. In the case of Joint Service system technical requirements, normally a Joint Programming Office (JPO) is established to assure the proper Service representation.

(3) Research and development is done within the various laboratories of the Services. It is Program 6 of the eleven major mission-oriented force programs which make up the Defense Program. It has five major divisions: research, exploratory development, advanced development, engineering development, and management and support. Research is started based on a military need or approval to pursue experimentation or scientific study. Research efforts directed to solving specific military problems are included in exploratory development. Advanced development includes work on developing hardware for experimental or operational tests. Engineering development is work on projects being engineered for military use but not yet approved for procurement or military operations. Management and support is work directed towards installations, general R&D work, technical integration, test and evaluation, etc. There is also a special category of Research funding for system development, engineering, and testing. Some of the resources come from the Program 6 funding itself, and some from monies allocated by the Service to a specific acquisition program. Recently, an effort was made to consolidate laboratories and exchange information to help preclude duplicate efforts and conserve valuable resources. This effort is known as Project Reliance and it continues under joint management. The Air Force contributes about 87% of all Service lab investment in space technology development. The Joint Service cooperative space system R&D appears to be working well, except as noted in Finding 1.

(4) The fourth part of design is acquisition. The primary agent for acquisition of bus and payload systems is currently the Air Force. All Services take part in developing surface-based sensor systems. About 75% of the investment in unclassified space system acquisition has been done by the Air Force. Therefore, acquisition primarily falls under the Air Force for DoD space systems. However, Services have, in the past, designed, acquired, and launched or fielded space systems in support of their requirements. Examples of this are the GEOSAT Follow-On

(GFO) satellite program, which is contracted by the Navy to fill an unsatisfied requirement for naval warfighter support, the Navy Space Surveillance System (the Fence), and the Army radars at Kwajalein.

c. Launch - Launch is the cornerstone of every space transportation system and most weapon delivery systems. The technology base that made the United States the undisputed world leader in the 1960s and 1970s was developed in the 1950s. This base has been seriously eroded and very little has been done to upgrade this technology base. Since 1970 the R&D budget for launch has steadily declined and as a result, the skilled work force is aging and the facilities are deteriorating. The launch systems, built to support Intercontinental Ballistic Missile forces and space research and development, are clearly not sufficient to support current and future DoD operations in space. Principal deficiencies center around responsiveness, reliability and cost efficiency. In late 1992 the National Space Council published the Aldridge Report concluding that launch needs of DoD, NASA, and the commercial sector were not being met in terms of cost, responsiveness, availability and operability, and that the Air Force should manage a re-energized program to develop and operate space launch vehicles. The Air Force has the lead on this project and has been designated the primary agent for launch. However, as mentioned above, the other Services have occasionally gone to commercial contractors for launch support, particularly if the Air Force was unable to fulfill their launch needs.

d. Operations - For the purposes of this study, operations were broken down into bus control, systems operational management, and payload control.

(1) The AFSPACECOM Consolidated Satellite Operations Center (CSOC) currently controls all (white systems) DoD bus operations through the Air Force Satellite Control Network (AFSCN) except for the Navy LEASAT, the FLTSAT EHF Package (FEP), and TRANSIT systems. NAVSPACECOM's Naval Satellite Operations Center (NAVSOC), using the Naval Satellite Control Network (NSCN), provides control of the FEP and the TRANSIT systems. FLTSAT and UFO nominal control flows from the NAVSOC through the CSOC. A commercial contractor provides bus control for the LEASAT. By 1996, some of the older satellite systems are scheduled for retirement or inactivation and the NAVSOC is scheduled to be controlling only the GFO 1 satellite and the FEP. The current AFSCN and the NSCN are complementary and not duplicative. Both the AFSCN and the NAVSOC are currently undergoing, or have just completed, upgrades.

(2) Systems operational management includes the functions of the systems manager and the systems operational manager (SOM). The Chairman, Joint Chiefs of Staff, identifies system managers (usually Services) to exercise authority over the planning, direction, and control of tasks and associated functions essential for support of designated weapons or equipment systems. Chairman, Joint Chiefs of

Staff Memorandum of Policy Number 37 (CJCS MOP-37) provides general guidance on the planning and management of MILSATCOM systems and tasks systems managers to select system operational managers (SOMs) for the appropriate systems. SOM, as currently defined in JCS MOP 37, specifies the lead organization responsible for day-to-day operations of a MILSATCOM system. MOP 37 applies the SOM definition to MILSATCOM systems only. As the system manager for AFSATCOM systems and the MILSTAR system, the Air Force has designated AFSPACECOM the SOM for those systems. The Navy has split SOM functions for FLTSAT/LEASAT, and the UHF Follow-On (UFO) between NAVCOMTELCOM and NAVSPACE. DISA is DSCS SOM. The Joint Staff allocates/assigns MILSATCOM resources and is arbiter for conflicting MILSATCOM requirements. While MOP 37 applies the term SOM only to MILSATCOM systems, the Study Group saw the utility of applying a similar definition to all space systems management. This definition would specify the SOM as "the lead organization responsible for day-to-day operations of a space system."

(3) Payload control as defined in Appendix B includes the changing of payload operating modes (e.g., frequency plans, antijam frequency hopping) to support operational requirements. AFSPACECOM controls all (white) DoD payloads except the Navy's TRANSIT, FLTSAT, FEP, GAPFILLER, LEASAT, and UFO systems. USARSPACE currently executes payload control for DSCS based primarily on instructions from the SOM, DISA. AFSPACECOM has the capability to backup USARSPACE in the control of DSCS payload if necessary.

e. Some space system operations for specific systems were not addressed. LANDSAT future systems operations were being discussed by a joint working group to determine if the DoD or NASA will operate it. It was decided that NASA would operate LANDSAT. National systems operations were not discussed in this study.

f. An important role is played by the Service components in all of the above functions relating to space systems. Service components were established in the 1980s (Air Force - 1982, Navy - 1983, and Army - 1988). They, along with DISA and other Agencies, share responsibility for space system operations. Their primary function to date, other than executing the operations for their assigned space systems, has been assisting the Services and components of the warfighting commands in the application of space system products. The components also support the Services in the planning, programming, and budgeting functions related to space systems requirements, acquisition, and operations. Additionally, the components are vital for advocacy. DISA and the other agencies also provide advocacy for space systems, as appropriate.

g. There is a marked difference in the manning levels of the Service components, with the Navy being the smallest (168 military/286civilian); followed by the Army (380 military/80 civilian); and Air Force, by far the largest (22,116

military/4680 civilian).

h. The Army and Navy components have dedicated space applications teams which have previously done much more to train and educate their Service users of space systems, and these efforts were amplified during Desert Storm. As a result, when Operation Desert Storm occurred the Air Force had to develop effective means to provide warfighters tactical information from satellite systems. Using GPS as an example, the Air Force had 6% of the receivers (5% of the aircraft had GPS receivers), the Army used 80% , and Naval forces used 16% of the almost 5,000 tactical receivers in the theater (of which, 4,500 were purchased and shipped in preparation for the war).

i. The Air Force emphasis on space in the past has been on acquiring and operating satellites; since the Service has never been the predominant user of the space systems it operates, the Air Force had not developed the methods for training and educating warfighters in the application of space support. As a means to correct their deficiencies and to catch up with other Service efforts in this area, the Air Force has recently designed and opened a Space Warfare Center in the National Test Facility (NTF) at Falcon Air Force Base.

j. All Services have developed space operations training and support programs to support their Service warfighters in the application of space systems. However, there is no Joint effort to exploit space products and to develop the synergistic application/integration of these products for the warfighter.

8. There are five major findings.

a. Finding 1. *The Study Group found no compelling arguments to designate the Air Force as the sole agent for design*[1]*, launch, and operation of space systems and a strong argument against such a decision.* (Appendix D, Annex 1)

b. Finding 2. **Space provides essential support for all services and CINCs; single Service consolidation would jeopardize joint service/agency expertise and representation.** (Appendix D, Annex 2)

c. Finding 3. *Space launch is a significant problem, but is currently being addressed under the Office of Science and Technology Policy Launch Study and the DoD Space Launch Modernization Plan.* USSPACECOM review found that, with the possibility of an impending convergence of military, civil, and civilian space programs, it is premature to make a recommendation concerning launch.

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1 "Design" encompasses system technical requirements definition, technical specifications, research and development, and acquisition for bus and payload

(Appendix D, Annex 3)

d. Finding 4. ***A single, central point for space systems operational management is needed.*** (Appendix D, Annex 4)

e. Finding 5. ***There are deficiencies in the application of space systems in the support of warfighters.*** (Appendix D, Annex 5)

9. Recommendations. Although not specifically requested, the deliberations of the evaluation group led to eight recommendations, listed below with a synopsis of the rationale for each:

a. Recommendation 1. ***Continue space system R&D at the Joint labs in the direction established by Project Reliance.*** The Joint Service cooperative space system lab R&D programs appear to be working well under DoD's Project Reliance. Project Reliance is the joint lab system that fosters interaction among the laboratories and contributes to the definition of joint requirements of combatant forces. The one current exception to this integration is some space systems' R&D under the Army's Space and Strategic Defense Command. The Army should integrate its total space R&D program into the joint lab system.

b. Recommendation 2. ***The current process of requirements definition and concept development for space systems requires improvement to ensure greater Joint and Service influence in decision-making.*** These functions are a natural outgrowth of Service and CINC responsibilities in determining what is needed to prosecute their warfighting and training missions. However, with increasing budget pressures and dramatically different post-Cold War strategies, it is essential for all Services to better understand the costs and benefits of requirements and the trades that may be made in meeting budgetary constraints. Further, important new defense space capabilities (e.g. multi-spectral imaging and missile defense systems) are under the management of separate Agencies and not within normal Service/component channels. This could lead to the development and fielding of systems which do not have capabilities deemed essential by combatant commanders and their components. Further normalization of the Service-component-combatant command relationship for space forces is essential.

c. Recommendation 3. ***Space acquisition should be done in jointly manned System Program Offices (SPO) within the Air Force acquisition system.*** The Air Force is the lead service for acquisition in a majority of current and programmed DoD (non-NRO) space systems. It is essential, however, that all services and agencies with approved requirements have significant involvement in program management to ensure adequate representation of those requirements throughout the development process. With the possibility of converging military and civilian space programs (at least in some areas) integrated DoD representation will be more

important. Codification of Service participation in jointly manned SPOs would help ensure adequate participation and help normalize space system acquisition. This recommendation should not prohibit a service from pursuing a space program which supports its warfighters in cases where the Air Force cannot satisfy those service needs.

d. Recommendation 4. ***Merge space system bus operations into a common satellite control network. This should be done as soon as possible, but not later than 1999.*** The primary goal is for a single entity to integrate all bus operations. The first opportunity top start this is when TRANSIT is inactivated in 1996, the Navy's GFO satellite would be the only satellite bus that the Air Force's common user Satellite Control Network (AFSCN) may not be able to control. The GFO is compatible with the AFSCN; however, the AFSCN may not meet all Navy control requirements until 1998-99 if current plans for AFSCN upgrades remain on schedule. Merging the AFSCN and Navy control network during the 1996-99 period has the potential to achieve improvements in efficiency and effectiveness, while assuring maximum support for the combatant commanders. It should be noted however, that there could be exceptions to using a common satellite control network (e.g. for small tactical satellites which may be developed in the future where it may not be operationally or economically feasible to integrate these systems into the common satellite control network). (See also Paragraph 10. below)

e. Recommendation 5. ***Multi-Spectral Imagery (MSI) systems operations should come to USSPACECOM for delegation to a component.*** Recognizing there are uncertainties in this program, should an MSI program continue and its operations be a DoD responsibility, USSPACECOM, as operator of all other DoD operational space systems, is the logical choice to operate MSI systems. USSPACECOM operation would preclude setting up a duplicative operational process and would ensure efficiency and responsiveness to combatant commands.

f. Recommendation 6. ***The current operating Kwajalein sensors should remain with USARSPACE.*** Army operation of Kwajalein sensors is working well. There is no duplication with other space operations and the main mission of these sensors is missile tracking. In addition, there were no resource savings or value added associated with transferring these operations, or the operation of the Navy Space Surveillance Network, to the Air Force. (See also Paragraph 10. below)

g. Recommendation 7. ***Assign combatant command authority over all defense space systems to USCINCSPACE (USCINCSPACE to assign operational control of all forces to component commands).***

1) **Consolidate Payload operations under USSPACECOM.** Currently, DSCS is the only non-Black space system whose payload is not under USSPACECOM; the Air Force Consolidated Space Operations Center and the Navy

NAVSOC currently control all non-Black DOD payloads. USARSPACE has the capability to control the DSCS III payload. Future satellites employing on-board processing will facilitate use by warfighting CINCs, but current and projected use requires centralized direction of payload operations. USSPACECOM has a separate initiative under way to resolve this issue.

2) **Consolidate space systems operational management under USSPACECOM.** System operational management for DSCS is also handled differently than other non-black space systems. Consolidation is consistent with the USCINCSPACE's Title 10 and Unified Command Plan (UCP) responsibilities, and will conserve resources while providing improved support to Unified Commands.

h. Recommendation 8. ***The Joint Staff should review the System Manager designation for Defense Satellite Communications System (DSCS) (currently DISA).*** System managers exercise authority over the long range planning, direction, and functions necessary for support of weapons systems. Consolidating this function under USCINCSPACE will eliminate the stovepipe management structure for this system and allow a system of systems approach for military satellite communications. It also resolves conflicts with COCOM/OPCON responsibilities over a vital space system.

10. USSPACECOM Initiatives. Other recommendations from the study group were approved by USCINCSPACE as initiatives for USSPACECOM to undertake. As a result of this study, USSPACECOM will:

a. Conduct a study of merging the AFSCN and NSCN to determine the most efficient and cost effective solution.

b. Conduct an analysis of space surveillance to determine required force structure.

c. Lead an effort to develop a strengthened Joint space "road map" to guide new space systems and concepts of operation.

d. Actively support Component efforts in exploiting space systems in support of warfighters (e.g., space warfare centers).

11. Dissenting Positions. There were some dissenting opinions to the Study Group draft Final Report dated 29 October 1993. These can be found in Annex E.

## APPENDIX A

## TERMS OF REFERENCE

## STUDY TO DESIGNATE AFSPACECOM AS THE PRIMARY AGENT FOR THE DESIGN, LAUNCH, AND OPERATION OF SATELLITES

1. Purpose. To establish the scope and procedures for the study to determine whether AFSPACECOM should be assigned as the primary (sole) agent for the design, launch, and operation of space systems.

2. Background.

a. The CJCS 1993 Roles and Missions (R&M) Report emphasized the need to consolidate and reorganize to eliminate unnecessary duplication. It identified several initiatives. One initiative recommended a review be conducted to determine if the space mission should be assigned to AFSPACECOM and if USSPACECOM should be eliminated (a separate Joint Staff/J-5 effort is addressing this question). Related to this issue was the requirement to review space systems.

b. On 29 Mar 93, SecDef directed a "fast track study to report findings on the proposed merger of USSTRATCOM and USSPACECOM and possible designation of AFSPACECOM as the primary agent for design, launch, and operation of satellites."

c. On 10 May 93 the study group examining this tasking conducted its initial meeting. This group interpreted the original tasking to reflect the changes that are seen in paragraph one.

3. Study Objective. The intent of the R&M assessment process was to identify opportunities to eliminate unnecessary redundancy and improve efficiency. In keeping with that intent, the study will assess how to ensure the best possible space support to Warfighting CINCs and their component commands. It will examine the R&M proposal and any alternatives based on measures of merit described in paragraph 7.

4. Definitions. To establish a framework for consideration of the tasking the following definitions were used:

a. Air Force Space Command (AFSPC) - The primary Air Force organization involved in the development, acquisition, and operation of space systems. This includes coordinating and/or directing those Air Force organizations that define

and refine technical requirements; develop and acquire space systems; control mission or execute satellite payload commands; and operate Air Force terrestrial-based space support systems.

b. Space Systems - All DoD space systems as specified in the current Forces For Document and anticipated subsequent revisions (e. g., ASAT) to include infrastructure (Joint Pub 1-02).

c. Design - Will encompass system technical requirements definition, technical specifications, research and development, and acquisition for bus and payload. (Note: Operational requirements are CINC/Service responsibility.)

d. Launch - The organic and contract responsibility for all DoD launches. It includes payload integration (Joint Pub 1-02), ownership/operation of platforms, and checkout of bus/payload prior to operations. It excludes suborbital ballistic and guided missiles.

e. Operations - Includes Telemetry, Tracking, and Commanding (TT&C) of the bus, as well as control, systems management functions, and recovery (including residual operations) of payloads.

5. Scope. CJCS proposal and subsequent tasking from the SecDef and Joint Staff contains two distinct, but related issues. This study will only examine the following issue:

a. It involves a Service and interagency reorganization of space operations and functions under the Air Force. Under this concept, AFSPACECOM would operate all space systems. The Air Force would be the lead Service to coordinate with NASA on LANDSAT remote earth sensing operations, and DoD functions at Johnson Space Center would be consolidated into a single organization under AFSPACECOM.

b. The following questions will be used to clarify the scope of the study:

(1) Scope observation: The final answer must compare current and proposed warfighting capability.

(2) Scope observation: Service procurement of commercial space system support (e.g., LANDSAT, commercial launch, INTELSAT communications channel, etc.) will be addressed.

(3) Scope observation: Satellite operations can be broken down into several parts (e.g., bus, payload, etc.). Therefore, these items will be considered separately.

(4) Scope observation: Service representation in joint operational requirements development for space systems will be considered.

(5) Scope observation: Service and Agency representation in the process (design, launch, and operation of space systems) will be considered.

(6) Scope observation: Space support involves satellite systems and associated supporting terrestrial infrastructure, however, terrestrial receivers will only be addressed if there is a direct impact on a space system.

(7) Scope observation: Impacts and costs/savings can differ for each program. Therefore, impacts and costs/savings will be addressed for each space system.

(8) Scope observation: Service representation in the design and concept development of space systems will be considered.

(9) Scope observation: Consolidation of Research and Development for all DoD space systems will be examined. Black and National space systems will not be considered.

(10) Scope observation: The study will consider the various Service and other Agency concerns regarding this issue.

6. Procedure. This study will seek to determine the efficacy of the proposal by:

a. Analyzing the proposed concept derived from the R&M report. This proposal will be used as the departure point for the study. Key to the analysis will be the measures of merit which are contained in paragraph seven below.

b. Examining other options if the proposed concept is determined to be inadequate.

7. Measures of Merit. The study of the proposed concept and any other options must answer the following questions in order to determine whether a concept should be recommended. Does the proposed concept or any other option:

a. Improve support to combatant commanders?

b. Conserve overall resources (manpower, dollars, etc.)?

c. Eliminate unnecessary redundancies?

d. Maintain Joint/Service space expertise and operational focus?

8. Responsibilities.

a. The Study Director will:

(1) Schedule working group sessions.

(2) Provide conference room facilities.

(3) Coordinate working group products.

(4) Produce a summary of each working group session.

(5) Produce report and implementation plan (if applicable).

(6) Prepare a briefing for the SecDef.

(7) Request participation by the Services, Agencies, and others as required.

(8) Determine the appropriate course of action in the event of irreconcilable issues. Dissenting views with merit will be included in the final product.

b. Participants will:

(1) Attend working group sessions.

(2) Provide written inputs/briefings as tasked.

(3) Designate backups to represent their Service/Organization/Agency in the event the primary participant can not attend.

9. Schedule. The following schedule reflects planned meeting dates based upon current information:

| | |
|---|---|
| 11-12 May 93 | Initial Meeting |
| 27-28 May 93 | Second Meeting - Concept analysis and discussion. |
| 15-17 Jun 93 | Third Meeting - Concept analysis and discussion. |
| 29-30 Jun 93 | Fourth Meeting - Concept analysis and discussion. |

*20-21 Jul 93 Brief SecDef

*27-28 Jul 93 Report to SecDef

* NOTE: THESE DATES, AND THE BRIEF AND REPORT TO THE SECDEF HAVE BEEN SUBSEQUENTLY MODIFIED THROUGH COORDINATION WITH THE JOINT STAFF. THE BRIEF HAS BEEN CANCELED AND THE FINAL REPORT WILL BE SUBMITTED TO THE JOINT STAFF IN JAN 94.

10. The product of the study will be a decision brief/written report for the SecDef on the working group findings and recommendations. The draft version of the completed brief/report will be coordinated with the Joint Staff, appropriate Agencies, and the Service staffs prior to forwarding to the SecDef. If a proposal is recommended, the report will also include an outline and a proposed timetable for the development of the Implementation Plan.

11. General Information.

a. The primary meeting area for the study group will be HQ USSPACECOM at Peterson AFB, Colorado.

b. The working group will meet a minimum of four sessions. Each session will last two/three days. There will generally be a one/two week break between each session to allow the Study Director to consolidate inputs into a "strawman" for discussion by the working group. This period will also allow participants to catchup on other duties and collect any additional information.

12. Questions can be directed to LTC Russ DeWitt, USSPACECOM/J5B, DSN: 6925900, COMM (719) 554-5900.

## APPENDIX B

## DEFINITIONS

1. Bus Control - Consists of telemetry, tracking, and control of the satellite bus.

2. Combatant Command (COCOM) - The nontransferable authority of a Combatant Commander to perform those functions of command over assigned forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction over all aspects of military operations, joint training, and logistics necessary to accomplish the missions assigned to the command.

3. Design - Encompasses system technical requirements definition, technical specifications, research and development, and acquisition for bus and payload.

4. Launch - The organic and contract responsibility for all DoD launches. It includes payload integration, ownership/operation of platforms, and checkout of bus/payload prior to operations. It excludes suborbital ballistic and guided missiles.

5. Operational Control (OPCON) - Transferable command authority which may be exercised by commanders at or below the level of combatant command. OPCON is inherent in COCOM and is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. OPCON should be exercised through the commanders of subordinate organizations; normally this authority is exercised through the Service component commanders. OPCON normally provides full authority to organize commands and forces and to employ those forces as the commander in operational control considers necessary to accomplish assigned missions.

6. Operations - Includes Telemetry, Tracking, and Commanding (TT&C) of the bus, as well as control, systems management functions, and recovery (including residual operations) of payloads.

7. Payload control - Antenna pointing, power or gain changes, antenna discrimination, transmission security key distribution, crosslink reconfiguration, payload processor configuration, and payload commanding. Includes the changing of payload operating modes (e.g., frequency plans, antijam frequency hopping) to support operational requirements.

8. System manager - Those organizations identified by the Chairman of the Joint Chiefs of Staff to exercise authority over the planning, direction, and control of tasks and associated functions essential for support of designated weapons or equipment systems. When relating to a specific system manager, this term will be preceded by the appropriate designation (e.g., FLTSATCOM system manager, DSCS system manager).

9. System operational manager (SOM) - Lead organization responsible for day-to-day operations of a space system. Normally designated as having primary responsibility for managing the system to maximize the satisfaction of user requirements. Note: The Study Group applied this definition to all space systems, whereas MOP 37 applies it to MILSATCOM systems only.

10. Space systems - All DoD space systems as specified in the current Forces For Document and anticipated subsequent revisions (e.g., ASAT) to include infrastructure.

## APPENDIX C

## PROPOSALS VERSUS MEASURES OF MERIT

1. In accordance with paragraph 7 of the Terms of Reference, the following proposals were evaluated by each designated representative (Joint Staff, Army, Navy, Air Force, Marine Corps, DISA, and Study Director). As a means of facilitating discussion of the proposals, each of the designated representatives of the study group provided their position on the proposal being evaluated as it related to the measures of merit. The results of this evaluation and the rationale for each proposal is indicated below.

2. In the course of considering the primary question, several excursions were also considered. These variations were examined against the same general criteria and included transferring all space systems to AFSPACECOM except a portion of the Defense Satellite Communications System (DSCS) and the Kwajalein radars, centralizing MILSATCOM management under USSPACECOM and its components, and centralizing MILSATCOM management under DISA. Figures 2 - 6 illustrate each of the proposals, with Fig. 2 the basis and Figs. 3-6 showing proposed changes.

| | Measure of Merit | | | |
|---|---|---|---|---|
| Proposal | Improve support | Conserve resources | Eliminate redundancies | Maintain Joint/Svc expertise |
| 1. Maintain Status Quo | Yes - 0<br>No - 7 | Yes - 0<br>No - 7 | Yes - 0<br>No - 7 | Yes - 7<br>No - 0 |
| 2. Transfer all to AFSPACECOM | Yes - 3<br>No - 4 | Yes - 3<br>No - 4 | Yes - 4<br>No - 3 | Yes - 0<br>No - 7 |
| 3. Transfer all to AFSPACECOM - except part of DSCS and Kwajalein radars | Yes - 3<br>No - 4 | Yes - 3<br>No - 4 | Yes - 4<br>No - 3 | Yes - 0<br>No - 7 |
| 4. Centralize MILSATCOM management under USSPACECOM | Yes - 5<br>No - 2 | Yes - 5<br>No - 2 | Yes - 0<br>No - 7 | Yes - 3<br>No - 4 |
| 5. Centralize MILSATCOM management under DISA | Yes - 3<br>No - 4 | Yes - 0<br>No - 7 | Yes - 0<br>No - 7 | Yes - 5<br>No - 2 |

Figure 1

3. *Maintain the status quo.* Used by the study group as a baseline. Current space responsibilities are illustrated in Figure 2. As can be seen, there are many diverse organizations involved with the different space systems.

4. *Transfer <u>all</u> space systems operations to AFSPACECOM.* Figure 3 portrays those responsibilities that would change under this proposal. The positions split for the first three Measures of Merit, with the Army, Navy, Marine Corps and DISA representatives seeing no improvement through this proposal. The main rationale against this proposal was the decrease in "jointness" in the space mission. The Navy and Marine Corps rationale was: (1) historical Air Force "strategic" focus and its failure to support tactical warfighters; (2) failure to identify any duplicative functions, the elimination of which would garner resource savings; (3) failure to identify any unnecessary redundant systems; and (4) the resultant loss of joint participation in the space mission. The Army stated that consolidation does not necessarily equate to resource savings. The DISA believed they should have primary responsibility for communications support to the warfighter, which requires MILSATCOM management to be at DISA. The Joint Staff, Air Force representatives, and the Study Director believed this proposal had some merit. Their rationale was that the Air Force currently has the predominant mission tasks (especially design and launch), and the Air Force and Navy satellite control operation will, in the future, represent a duplication of functions. In at least one case, a Study Group Panel consisting of the Service Representatives to the Study Group determined there were potential savings of $40M - $50M (see table 3, page C-1-11) through the year 2000 through consolidation of TT&C at AFSPACECOM. This savings results from the closure of the Navy tracking stations and their associated operations and maintenance costs. However, the Panel was not able to determine if closing the Navy tracking stations is the most cost effective or operationally efficient option nor were they able to document any resource savings through consolidation of satellite surveillance sensor systems. **Current operations are not duplicative due to the stove pipe development of current systems.** However, there appears to be an opportunity in 1996 to begin to merge satellite bus operations if current planning comes to fruition. Merging of some satellite operations could potentially improve support to the warfighter by providing a single point of contact that has more overall capability. However, without joint representation in the consolidated operations, significant linkage to component operations would be lost.

5. *Transfer all to AFSPACECOM except a portion of DSCS.* Figure 4 illustrates those responsibilities that would change under this proposal. Opinion split identical to the proposal above, with the dialogue much the same. The focus of the discussion was on the transfer of Navy operations to the Air Force. The secondary emphasis was whether or not to maintain some DSCS operations under Army. The Army representative's view is that payload operations should be the responsibility of the Service most directly linked to the warfighter.

6. *Centralize MILSATCOM management under USSPACECOM.* Figure 5 depicts those responsibilities that would change under this proposal. The majority believed this proposal would improve support and conserve resources by consolidating all MILSATCOM operational employment and management under the unified

command and its components. Navy and DISA dissented; the Navy stated this was a communications function which should be DISA's responsibility; DISA contended the system of DSCS management was working well and should not be changed. Focus of this discussion was on the transfer of DSCS management from DISA to USARSPACE, as a component of USSPACECOM.

7. *Centralize MILSATCOM management under DISA.* Figure 6 illustrates those responsibilities that would change under this proposal. The original proposal was to transfer all other MILSATCOM management (except DSCS) from the USSPACECOM components to DISA. Opinion split on improving support, with Navy, DISA, and the Director seeing this as an improvement; all others believed there would be no improvement. No one envisioned this proposal as either conserving resources or eliminating redundancies. The majority saw joint service expertise being maintained because DISA is a joint Agency. DISA's video teleconference briefing focused on their proposal to consolidate communications management (only) at DISA with continued Service operation of MILSATCOM systems.

# CURRENT SPACE RESPONSIBILITIES

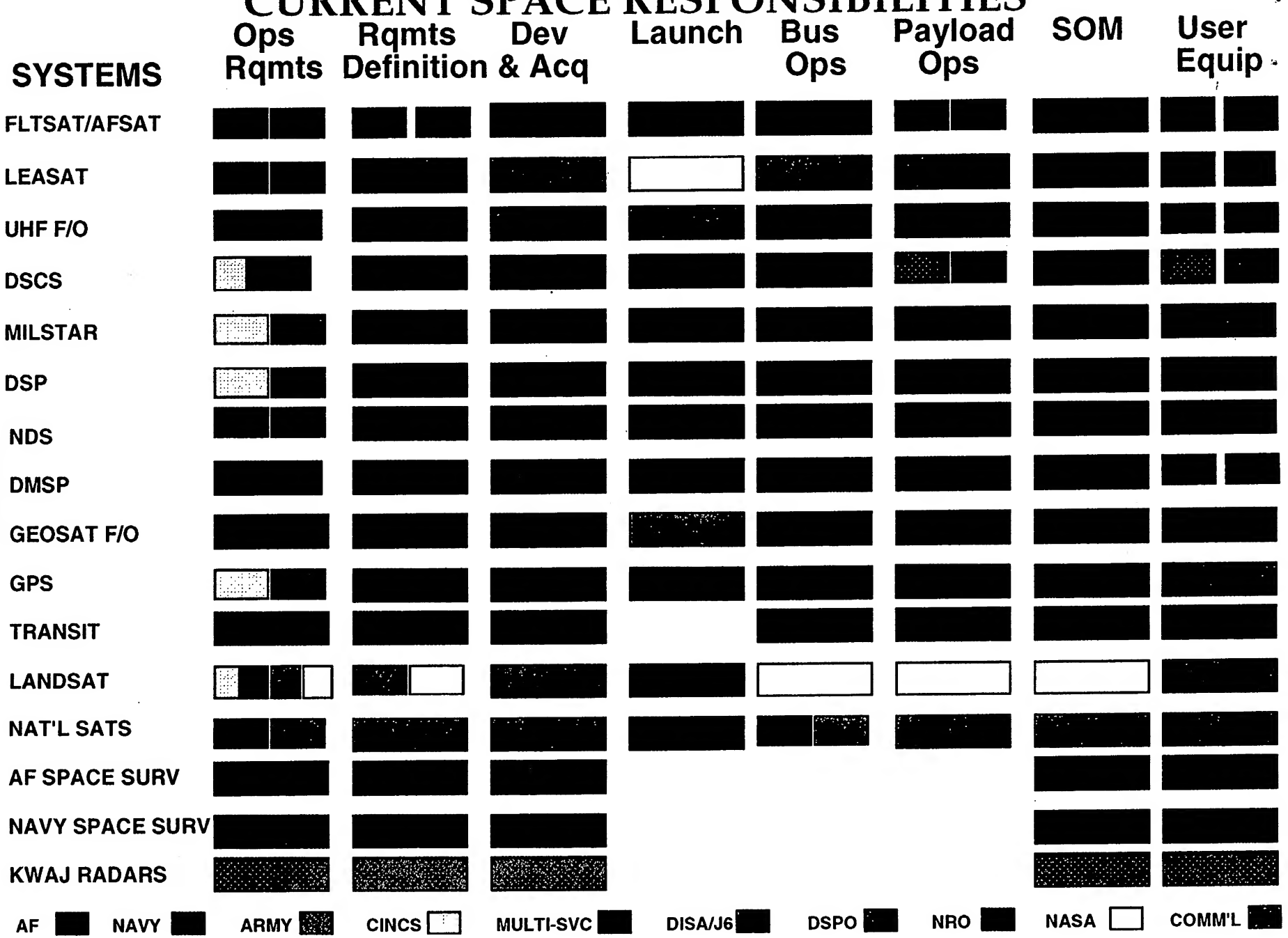


Figure 2
C-4

# R/M PROPOSAL

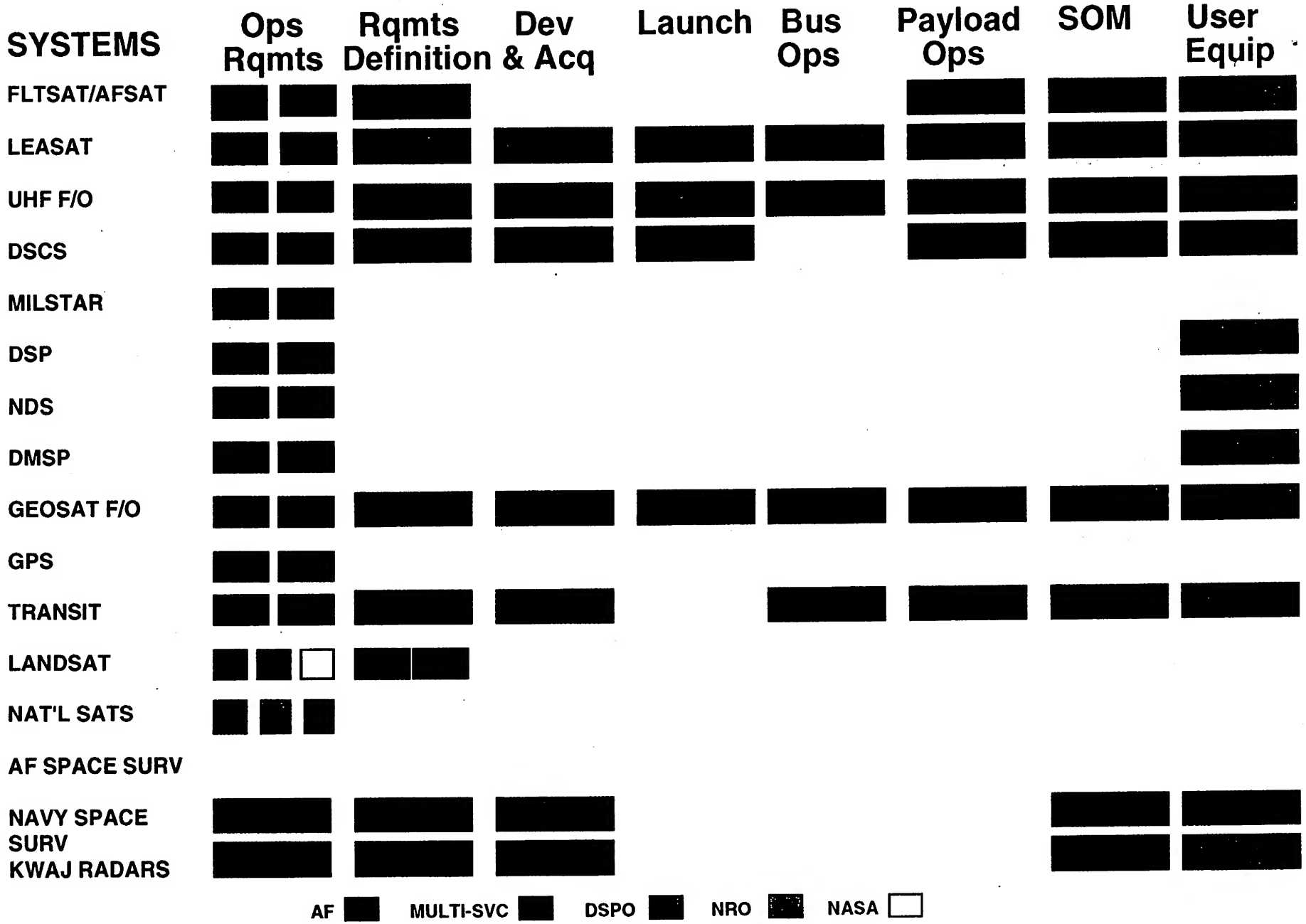


Figure 3
C-5

# R/M EXCURSION

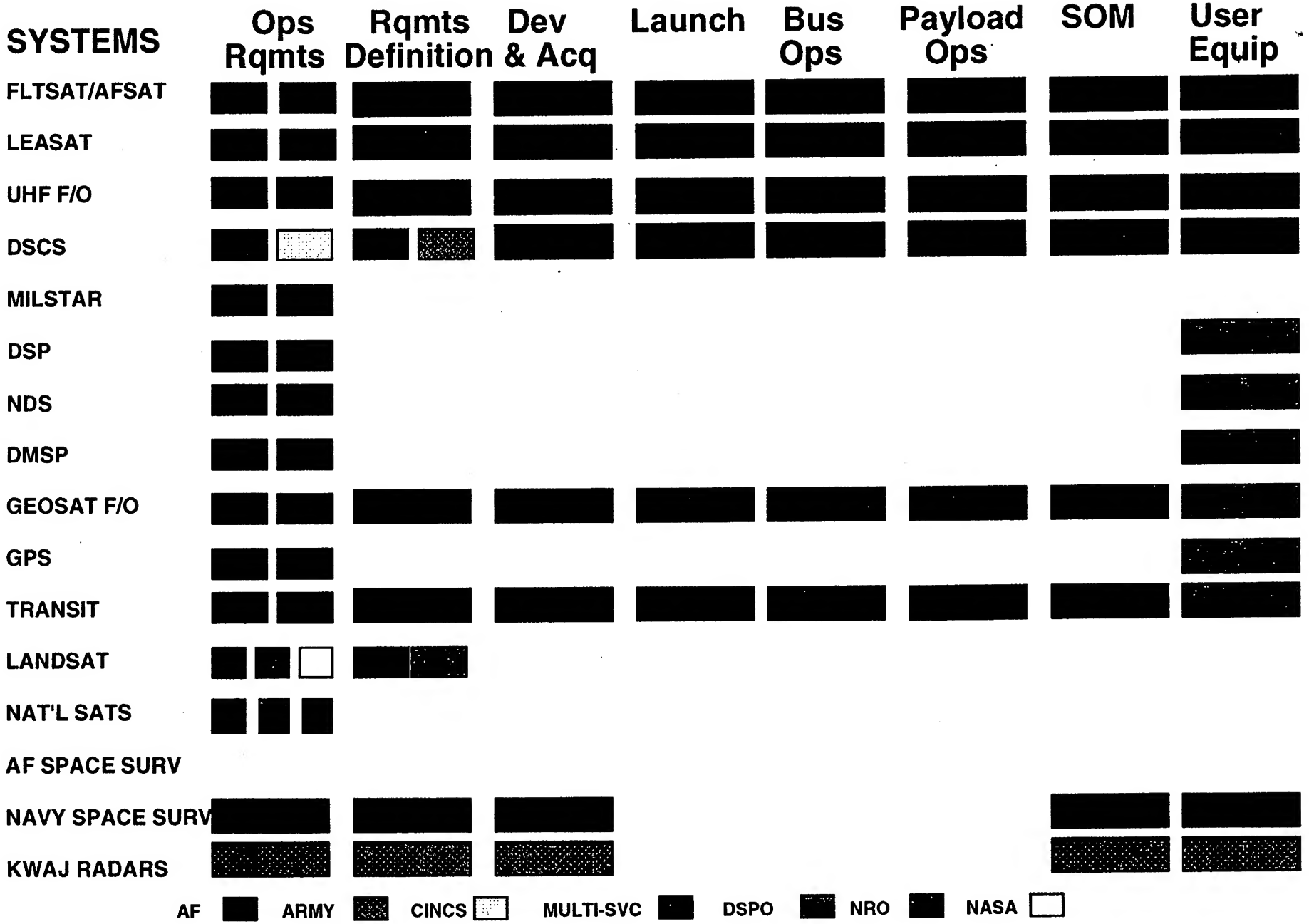


Figure 4
C-6

# USSPACECOM MILSATCOM PROPOSAL

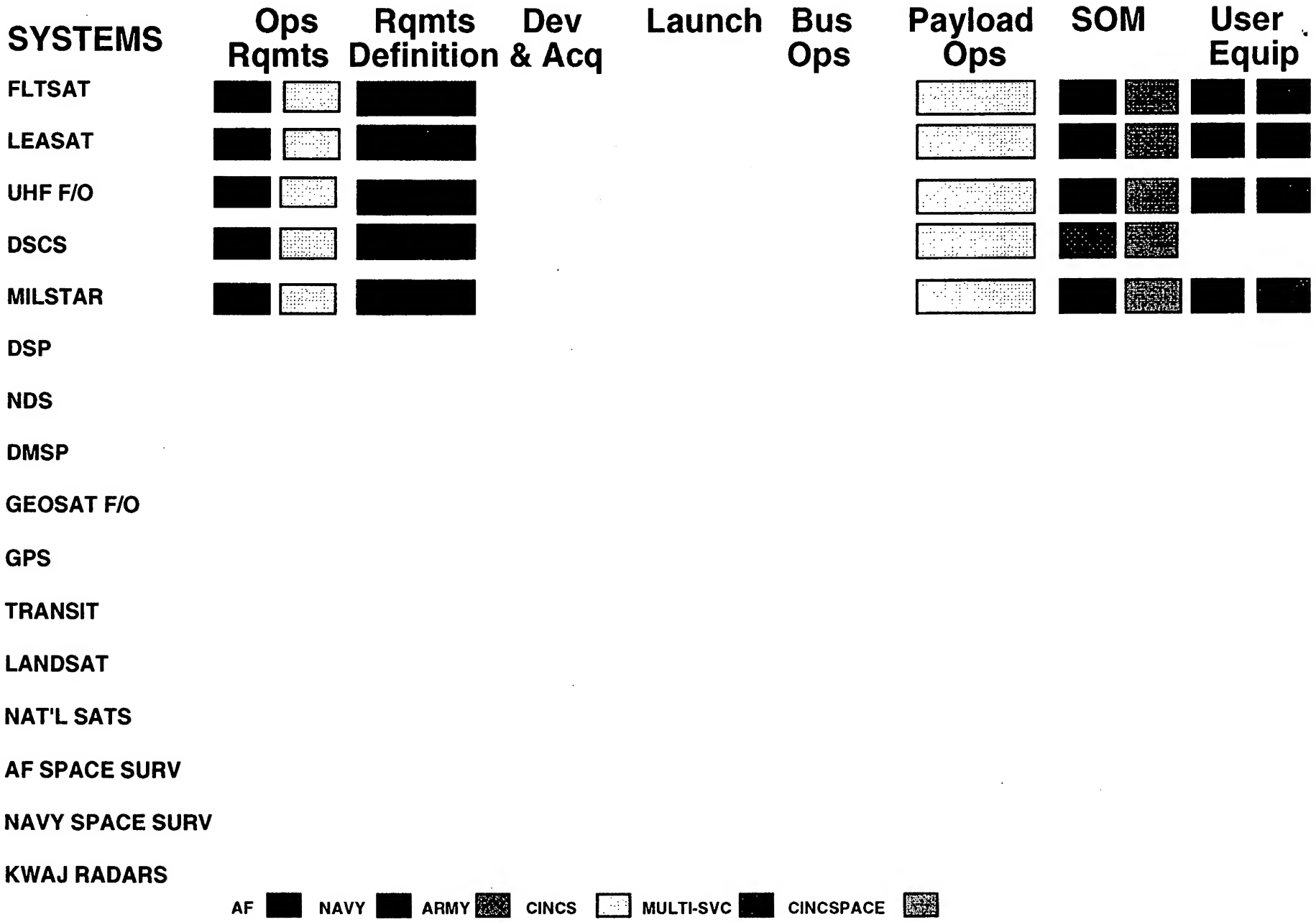


Figure 5
C-7

# DISA PROPOSAL

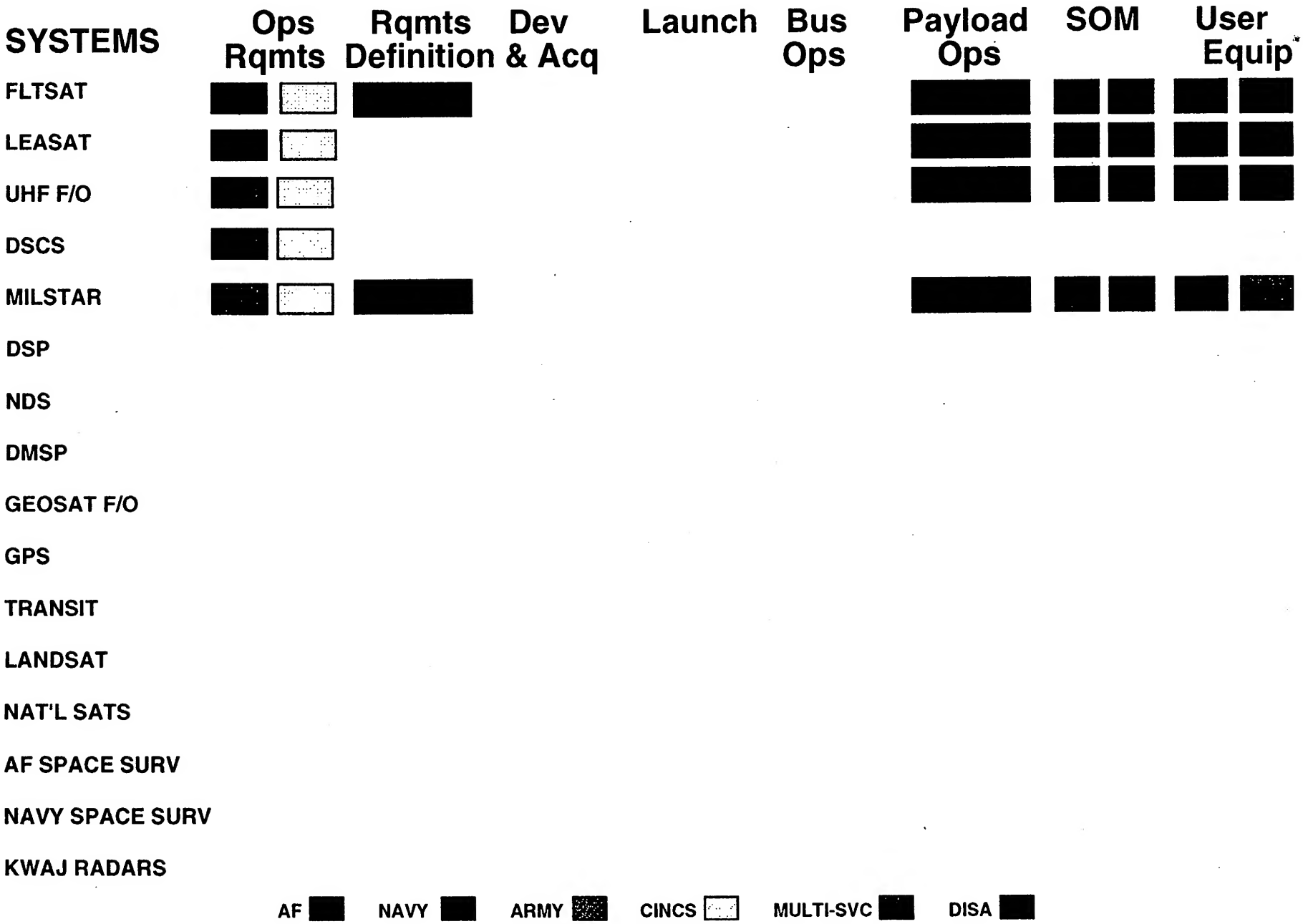


Figure 6
C-8

APPENDIX C
ANNEX 1

COST SUBGROUP REPORT

1. The Cost Subgroup was formed to identify costs associated with proposals under review by the Joint Staff Roles and Missions Working group. The group was chaired by CAPT W. R. Reeves, USN and consisted of representatives from USA, DISA and USAF.

2. Assumptions adopted by the subgroup to bound the problem are provided at Attachment (1). Financial data was collected from USN, USAF, DISA and USA.

3. The group was tasked to consider those systems assigned to USSPACECOM in current "Forces For" documentation for transfer to USAF. A listing of these systems is at Attachment (2). This list provided a baseline from which the group departed. Actual proposals of "how" USAF would organize itself to accomplish the functions associated with the systems became the driving factor for costing review. As proposals were developed by USAF, agreement was reached that in some instances transfer was not achievable within the bounds established, or warranted from a "reasonable person" perspective. Those organizations and systems involved were withdrawn from the costing effort. A synopsis of these determinations is provided at Attachment (3).

4. Summary financial data sheets are provided at Attachment (4). This data provides a comparison of the level of effort of each service in performing the associated functions. Preliminary cost estimates (in FY-94 dollars) are provided for each alternative. Estimated savings or costs are depicted based on assumption that the proposal would be implemented as indicated.

## ASSUMPTIONS

* Transition between services to be completed no later than FY-95.

* Use President's FY-94 Budget and FYDP.

* Provide funding by PE, line item and activity group.
  - Operations and maintenance, manpower (mil/civ), base operating support, maintenance real property, and weapons procurement.

* Do not include user equipment (i.e. terminals).

* Include facilities by location and type.

* Include costs of Host/Tenant agreements.

SYSTEMS EVALUATED BY COST SUBGROUP

Space Surveillance

USAKA, Kwajalein (USA)

Navy Fence, Dahlgren (USN)

Satellite Communications

DSCS (USA & DISA)
- Regional Space Support Center (RSSC) CONUS, Arlington
- Regional Space Support Center (RSSC) Europe, Patch Barracks
- Regional Space Support Center (RSSC) Pacific, Wheeler AFB
- DSCS Certification Facility, Falcon AFB
- DISA System Operations Management, Arlington

FLTSAT, LEASAT, UHF FO (USN)

Satellite Control

NAVSOC, Pt. Mugu (USN)

Other

GFO (USN)

LANDSAT (NASA/USAF)

NASA Detachments

Attachment (2)

SYNOPSIS OF EVALUATION

**Space Surveillance**

USAKA

Radar facilities at USAKA Kwajalein perform deep space surveillance on a not-to-interfere, contributing basis. The radars are not duplicative of any existing USAF deep space sensor. USARSPACE presently reimburses USAKA for radar support provided, approximately $15.4M. USA absorbs all required overhead.

Facilities are part of National Test Range. Chairman's Roles and Missions report discusses Training, Test and Evaluation Infrastructure as a separate issue from space, indicating in the future test ranges will be consolidated under Defense Department management.

Assignment of these resources to USAF for deep space surveillance would require transfer of facilities from USA; no net savings. Transfer of entire test range to accommodate alignment of a contributory space sensor under USAF does not appear to be cost effective. There is no apparent value added to the transfer, nor is there any improvement in operational effectiveness of the space surveillance network or the range in general. Based on these reasons and the discussions which transpired, the Air Force modified their original proposal and stated these facilities should remain under Army control.

Navy fence and ASPADOC/ASSC

USAF proposed the shutdown of Navy fence, contingent on continuation of Cavalier Radar. Navy and USAF have been unable to reconcile differences regarding the feasibility of this proposal. Further complicating this proposal is Cavalier's role in other, non space-related functions; i.e., SALT draw down requirements.

If Navy fence were to be shutdown, Navy's ability to provide ASPADOC/ASSC would also be terminated. Therefore, costing data is provided to show the impact of closing the fence, establishing a NAVSPOC to support Commander, Naval Space Command, and to enable USAF to sustain Cavalier Radar and establish a replacement ASPADOC/ASSC.

Recommendation: Defer for further study to review the entire Space Surveillance Network for possible optimization of allotted resources.

**Satellite Communications**

Three proposals for MILSATCOM (UHF, SHF and EHF) management have been offered for consideration:

1. Two options to transfer all MILSATCOM management and operations to AFSPACECOM.

a. Option A would transfer all to AFSPACECOM (not examined).

b. In Option B the USAF would establish a MILSATCOM Management Division at AFSPACECOM; convert DSCS RSSCs into MILSATCOM Support Centers, expanding their functions to include UHF and EHF support; and, relocate CONUS RSSC (Arlington) to Falcon AFB. USSPACECOM would also establish a MILSATCOM Management Office with internal personnel resources. Present Air Force estimates result in a net DoD savings of 21 personnel.

2. Transfer DSCS SOM to a component of USSPACECOM (identified as USA); preserve present status for UHF and EHF SOM. Estimated savings of 2 personnel.

3. Transfer all MILSATCOM SOM to DISA. DISA would reassign personnel to improve CINC MILSATCOM planning and operations support at the field offices; zero personnel savings identified.

UHF/EHF

The issue with UHF Follow-on (UFO) is whether or not to transfer management of the acquisition to USAF. UFO is in the final stages of its contract, first launch attempted May 93. It was the consensus of the group that modification of the UFO contract at this point was counter productive.

The issue with FLTSAT, LEASAT, FEP and GAPFILLER was whether or not SOM and TT&C/anomaly support should be transferred to USAF. SOM considerations were included in the overall MILSATCOM management proposals above. TT&C issues are tied to outcome of NAVSOC decision discussed below.

**Satellite Control**

NAVSOC

While USAF is making adjustments to AFSCN usage/loading based on termination of some National systems, the ongoing upgrade of the AFSCN will not reach IOC until 2001. The upgrade will result in a "NAVSOC like" (i.e. distributed architecture) capability for USAF, but will not be compatible with Navy TT&C requirement until 1998-99. To transition NAVSOC any earlier would require replacing Navy with USAF personnel; no net savings.

Recommendation: defer decision to FY-96.

**Other**

GEOSAT FOLLOW-ON

The primary issue associated with shifting GFO acquisition to USAF was the ability of the AFSCN to handle the satellite and the additional workload. Review of AFSCN future plans indicated that an opportunity exists to make a transition in 1996. Specifically:

- GFO 1 scheduled for launch 96
- TRANSIT scheduled for closure 96
- workload associated with UFO and MILSTAR will be better understood
- DMSP 6 future will be better understood

It was determined that any near term modification to GFO 1 spacecraft operational requirements, i.e. different TT&C package, would essentially kill the program; fixed price contract in final stages of delivery. Planning for 96 would provide enough time to modify contracts, etc., and make a 2001 launch target for GFO 2 if needed.

Recommendation: continue with present acquisition program. If decision made to eliminate any other Service acquisition infrastructure for spacecraft, begin now to work on a transition plan for GFO 2 and 3 to USAF.

LANDSAT

Issue was deferred to ongoing LANDSAT working group, consisting of Service and NASA representatives, which is reviewing data distribution operational concepts.

NASA Detachments

Issue was withdrawn when reason for its inclusion in the Chairman's report could not be determined. There are no "Detachments" per se at NASA for USA, USN or USMC. There are other Service astronauts, with an administrative support vehicle in place, which were considered outside purview of the study.

## INCREMENTAL COSTS FOR MILSATCOM PROPOSALS

| PROPOSALS | Positions Considered | Transfer to Air Force | DoD Manpower Change | Savings ($ Millions) | Comments |
|---|---|---|---|---|---|
| USSPACECOM MMO | - | - | 0 | 0 | |
| USA DSCS SOM | - | - | -2 | 0 | |
| DISA SOM | - | - | 0 | 0 | |
| USAF PROPOSAL (Note 4) | | | | | |
| DISA Management | 13 | 0 | -13 | | DSCS |
| Army HQ Management | 3 | 1 | -2 | | RSSC |
| RSSCs | 22 | 22 | 0 | | RSSC Ops |
| Regional Dir Management | 6 | 1 | -5 | | RSSC |
| Navy | 6 | 5 | -1 | | UHF managers |
| TOTAL Manpower | 50 | 29 | -21 | 1.6 | |
| MSC Relocation | | | -1.0 | | |
| TOTAL AF Proposal | 50 | 29 | -21 | 0.6 | |

Table 1

Notes:

1. Table shows incremental costs and changes from FY94 President's Budget baseline.

2. Personnel costs based on AFR 173-13, 20 Apr 93. Officer Composite Pay Rate-$75,903 used to reflect "worst case."

3. Assumes no significant difference in O&M costs between Services to perform these functions.

4. Consolidate all MILSATCOM SOM and operations (except DSCS OC operations) in the Air Force. Creates MILSATCOM Support Centers (MSCs) to consolidate UHF, SHF, and EHF space systems support and replace RSSCs. MSCs would be operated on 80-hr work weeks (no change from currant level of effort). Savings are achieved through streamlined and reduced overhead resulting from consolidating management and operations in one organization.

Attachment (4)

# SPACE SURVEILLANCE
## ($ Millions)

| *Costs, with Consolidation* | FY94 | FY95 | FY96 | FY97 | FY98 | FY99 | FY00 |
|---|---|---|---|---|---|---|---|
| **Cavalier (Note 2)** | 9.9 | 6.6 | 6.7 | 6.9 | 7.1 | 7.2 | 7.4 |
| Cavalier O&M (Note 3) | | | 4.0 | 10.9 | 10.9 | 10.9 | 0.0 |
| Cavalier Mods (Note 4) | | | | | | | |
| Officer (10) | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.9 |
| Enlisted (14) | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Civilian (5) | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| PERSONNEL TOTAL | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.6 |
| **Cavalier Total** | 11.4 | 8.1 | 12.2 | 19.3 | 19.5 | 19.6 | 9.0 |
| **FENCE** | | | | | | | |
| Close Sites | 11.2 | 0.0 | | | | | |
| **AF ASPADOC/ASSC** | | | | | | | |
| Setup Hardware | 2.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| COMM | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Personnel (Note 5) | 1.0 | 1.0 | 1.0 | 1.0 | 1.1 | 1.1 | 1.1 |
| O&M | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| ASPADOC/ASSC Total | 3.8 | 1.3 | 1.3 | 1.3 | 1.4 | 1.4 | 1.4 |
| **NAVSPOC** | | | | | | | |
| O&M | 1.8 | 1.8 | 1.9 | 1.9 | 2.0 | 2.0 | 2.1 |
| OPN | 1.0 | 1.0 | 1.0 | 1.1 | 1.1 | 1.1 | 1.1 |
| R&D | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| TOTAL | 2.8 | 2.8 | 2.9 | 3.0 | 3.1 | 3.1 | 3.2 |
| Officer (30) | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.5 | 2.6 |
| Enlisted (73) | 2.5 | 2.5 | 2.6 | 2.6 | 2.7 | 2.7 | 2.8 |
| Civilian (87) | 3.5 | 3.6 | 3.7 | 3.8 | 3.9 | 3.9 | 4.0 |
| PERSONNEL | 8.3 | 8.4 | 8.7 | 8.8 | 9.0 | 9.1 | 9.4 |
| **NAVSPOC Total** | 11.1 | 11.2 | 11.6 | 11.8 | 12.1 | 12.2 | 12.6 |
| **Total cost with consolidation** | 37.5 | 20.6 | 25.1 | 32.4 | 33.0 | 33.2 | 23.0 |

| *Costs, without Consolidation* | FY94 | FY95 | FY96 | FY97 | FY98 | FY99 | FY00 |
|---|---|---|---|---|---|---|---|
| Cavalier O&M | 11.4 | 8.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Close Cavalier | 0.0 | 0.0 | 4.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Recurring costs** | | | | | | | |
| Navy FENCE, ASPADOC, ASSC (Note 6) | 24.1 | 24.7 | 25.2 | 25.8 | 26.3 | 26.9 | 27.5 |
| **Total cost without consolidation** | 35.5 | 32.8 | 29.2 | 25.8 | 26.3 | 26.9 | 27.5 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Total cost without consolidation | 35.5 | 32.8 | 29.2 | 25.8 | 26.3 | 26.9 | 27.5 |
| Total cost with consolidation | 37.4 | 20.7 | 25.0 | 32.5 | 32.9 | 33.4 | 23.1 |
| **Savings** | -1.9 | 12.1 | 4.2 | -6.7 | -6.6 | -6.5 | 4.4 |

Table 2

Notes:

1. FY95-FY00 costs are based on Service provided FY04 estimates adjusted for inflation. Inflation rates taken from USAF Weighted Inflation Indices Tables. Personnel costs based on AFR 173-13, 20 Apr 93. Officer Composite Pay Rate-$75,903; Enlisted Composite Pay Rate-$33,992; and, Civilian (DBOF)-$40,641.

2. Cavalier would be kept open to augment the 29 space surveillance sensors remaining if the FENCE is closed. The 29 sensors would remain in any case so they are not included in the proposal cost.

3. Includes contracts, base support. Also includes costs of polychlorinated biphenyl and underground storage tank upgrade project (FY94 only).

4. POM funding.

5. Reflects worst case of 13 Officers.

6. Includes O&M, OPN, R&D, and Personnel.

## SATELLITE TT&C
($ Millions)

| ***Costs, with Consolidation*** | FY94 | FY95 | FY96 | FY97 | FY98 | FY99 | FY00 |
|---|---|---|---|---|---|---|---|
| Recurring Costs (Note 1) | | | | | | | |
| NAVSOC | | | | | | | |
| O&M (Note 2) | 8.5 | 8.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Sites (Note 3) | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| TOTAL | 10.0 | 10.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| AF Sat Control Net | | | | | | | |
| O&M (Note 2) | 167.0 | 170.8 | 174.8 | 178.7 | 182.5 | 186.5 | 190.7 |
| Sites (Note 3) | 38.7 | 39.6 | 40.5 | 41.4 | 42.3 | 43.2 | 44.2 |
| TOTAL | 205.7 | 210.4 | 215.3 | 220.1 | 224.8 | 229.7 | 234.9 |
| Upgrade | | 78.0 | 79.8 | 81.7 | 83.5 | 85.3 | 0.0 |
| Satellite Control Net TOTAL | 205.7 | 288.4 | 295.1 | 301.8 | 308.3 | 315.0 | 234.9 |
| TOTAL RECURRING COSTS | 215.7 | 298.6 | 295.1 | 301.8 | 308.3 | 315.0 | 234.9 |
| **Onetime costs** | | | | | | | |
| Close Sites (Note 6) | | | | 5.0 | | | |
| Close NAVSOC HQ | | | | 3.0 | | | |
| GFO Transfer (Note 7) | | | | TBD | | | |
| TOTAL Onetime COSTS | | | | 8+ TBD | | | |
| **DoD Cost with consolidation** | 215.7 | 298.6 | 303.1 | 301.8 | 308.3 | 315.0 | 234.9 |

| ***Costs, without Consolidation*** | FY94 | FY95 | FY96 | FY97 | FY98 | FY99 | FY00 |
|---|---|---|---|---|---|---|---|
| NAVSOC | | | | | | | |
| O&M | 8.5 | 8.7 | 8.9 | 9.1 | 9.3 | 9.5 | 9.7 |
| Sites | 1.5 | 1.5 | 1.6 | 1.6 | 1.6 | 1.7 | 1.7 |
| TOTAL | 10.0 | 10.2 | 10.5 | 10.7 | 10.9 | 11.2 | 11.4 |
| AF Sat Control Net | | | | | | | |
| O&M | 167.0 | 170.8 | 174.8 | 178.7 | 182.5 | 186.5 | 190.7 |
| Sites | 38.7 | 39.6 | 40.5 | 41.4 | 42.3 | 43.2 | 44.2 |
| TOTAL | 205.7 | 210.4 | 215.3 | 220.1 | 224.8 | 229.7 | 234.9 |
| Upgrade (Note 4) | | 78.0 | 79.8 | 81.7 | 83.5 | 85.3 | 0.0 |
| Satellite Control Net TOTAL | 205.7 | 288.4 | 295.1 | 301.8 | 308.3 | 315.0 | 234.9 |
| TOTAL RECURRING COSTS | 215.7 | 298.6 | 305.6 | 312.5 | 319.2 | 326.2 | 246.3 |
| **Onetime costs** | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **DoD Cost without consolidation** | 215.7 | 298.6 | 305.6 | 312.5 | 319.2 | 326.2 | 246.3 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DoD cost, without consolidation (Note 5) | 215.7 | 298.6 | 305.6 | 312.5 | 319.2 | 326.2 | 246.3 |
| DoD cost, with consolidation (Note 5) | 215.7 | 298.6 | 303.1 | 301.8 | 308.3 | 315.0 | 234.9 |
| **Savings** | 0 | 0 | 2.5 | 10.7 | 10.9 | 11.2 | 11.4 |

Table 3

Notes:

1. Due to differing capabilities, operations concepts, and scope of operations, the above numbers should not be used for direct comparisons of cost effectiveness.

2. Costs include operations, maintenance, sustaining engineering, communications and military/civilian salaries. Air Force Satellite Control Network funding does not include costs of other, program-unique equipment used by GPS, DMSP, DSP, MILSTAR, and other users.

3. Navy operates 3 tracking stations (3 antennas) at $0.5M each. USAF operates 9 tracking stations (16 antennas) at $4.3M each.

4. Navy completed a $1.4M upgrade in FY93; including computer hardware, software and purchase of an S-band antenna. Congress has "fenced" USAF Satellite Control Network upgrade at $78M for 5 years beginning in FY95; costs adjusted for inflation beginning in FY96. The upgrade will reduce O&M costs by $90M/year starting in FY01.

5. FY95-FY00 costs are based on Service-provided FY94 estimates adjusted for inflation. Inflation rates used were from USAF Weighted Inflation Indices Tables.

6. Cost to close two sites. Based on estimated costs of NASPASUR site closures.

7. Cost to move equipment and integrate hardware and software

# APPENDIX D

## MAJOR FINDINGS

The attached major findings reflect the results of the Roles and Missions Study Group.

APPENDIX D
ANNEX 1

## Major Finding 1

Statement of Finding

**The Study Group found no compelling arguments to designate the Air Force as the sole agent for design, launch, and operation of space systems and a strong argument against such a decision.**

Discussion

1. Design. Design encompasses system technical requirements definition, technical specifications, research and development, and acquisition.

a. The Study Group agreed that all Services should at least retain their current level of effort in concept development and requirements definition through Milestone 1 approval. These functions are an integral part of Service responsibilities to assess - in conjunction with the Unified and Specified Commands - the missions of their respective forces assigned to the components in light of current conditions, future conditions, and the differences in the required capabilities for those conditions. This assessment process leads to identification of deficiencies that can be solved by changes in organization, training, doctrine and/or materiel systems. Based on an understanding of those future responsibilities and potential deficiencies, operational concepts are developed which often lead to changes in organization, training, or doctrine and sometimes to the operational requirements for new systems. The materiel solution may or may not be a space system: trying to isolate the functions of concept development and requirements definition for a single category (e.g. space systems) of materiel limits the potential for other solutions and is counterproductive to the overall process. These functions are a natural outgrowth of Service and CINC responsibilities in determining what is needed to prosecute their warfighting and training missions. The current process of requirements definition and concept development for solutions that involve space systems requires improvement to ensure greater Joint and Service influence in decision-making. With increasing budget pressures and dramatically different post-Cold War strategies, it is essential for all Services to better understand the costs and benefits of requirements. Further, important new defense space capabilities (e.g. multi-spectral imaging and missile defense systems) are under the management of separate Agencies and not within normal Service/component channels. This could lead to the development and fielding of systems which do not have capabilities deemed essential by combatant commanders and their components. Further

normalization of the Service-component-combatant command relationship for space forces is essential. For all the remaining design functions the consensus is that the Air Force should remain the de facto primary agent for the translation of operational requirements into technical requirements and for acquisition of satellites. The Air Force is the lead service for acquisition in a majority of current and programmed DoD (non-NRO) space systems.

(1) The continued emphasis on joint operations and the growing need of all Services for support from space systems have resulted in requirements submissions from all Services and most Agencies. With the possibility of converging military, commercial, and civilian space programs (at least in some areas) integrated DoD representation will be more important. It is essential, therefore, that all Services and Agencies with approved requirements be involved in program management to ensure adequate representation of those requirements throughout the development process. An important aspect of that involvement is active participation at the management level in the cost/requirements trade-off process. Currently, Service representation within the Joint requirements process is considered adequate, specifically referring to the JROC process, which oversees requirements for major acquisition programs.

(2) It was deemed appropriate that whenever acquisition programs were started that were based on validated requirements from more than one Service or Agency, a Joint Program Office or a jointly manned System Program Office should be established - normally within the Air Force acquisition system.

b. Research and Development (R&D) was considered in this discussion, and the Joint Service cooperative space system lab R&D programs appear to be working well under Project Reliance. This system is proceeding in the right direction and contributes to the definition of joint requirements of the combatant forces. The exception to this is that the Space and Strategic Defense Command (SSDC) conducts some space systems R&D which is not integrated into the Joint Lab structure. The Army needs to assure its total space R&D program is integrated into the Joint Lab System. Additionally, all surface based space systems and components (e.g. Kwajalein radars, Navy Fence, Joint Tactical Ground Stations [JTAGS], etc.) should be the responsibility of the principle user.

c. The other Services, the Navy in particular, felt they needed to preserve the option to develop space systems to adequately and efficiently fill their space system acquisition needs. This position was based on the statutory function of the Services to equip forces. Forfeiting that statutory authority in the case of space systems was not acceptable to the Army and Navy representatives. This position was also forged from the Army and Navy experiences with GPS, MILSTAR, and GFO. All agreed that, should this option be exercised, the system had to be compatible with a common satellite control network. It should be noted however, that there could be

exceptions to using a common satellite control network (e.g. for small tactical satellites which may be developed in the future where it may not be operationally or economically feasible to integrate these systems into the common satellite control network).

(3) Transfer of the management of UFO and GFO systems acquisitions to the Air Force was discussed, however, both UFO and GFO are in the final stages of the contracts and there was agreement that transfer of the contracts from the Navy to the Air Force at this stage would be counter productive.

2. Launch. Launch was considered to be significant enough to warrant a separate major finding. Further discussion and recommendations are therefore covered under Major Finding 3.

3. Operations. It is believed there should be a goal of focusing all DoD space system operations (bus, payload, and SOM). If the DoD is to better exploit space capabilities to support warfighters, we must prevent the development of any fragmented responsibilities or overlapping missions, and streamline operational practices that have evolved over a period of time. Creation of a single point of contact for space operations would: eliminate development of redundant systems and capabilities; consolidate some administrative and support functions; and create a more cost effective, efficient, and standardized approach to space operations as we move into the next century. AFSPACECOM and NAVSPACECOM currently share satellite operations missions (exceptions are SOM for DSCS, a DISA responsibility, and payload control for DSCS III, executed by USARSPACE and backed up by AFSPACECOM) and operate two separate, but complementary, satellite control networks. AFSPACECOM's Satellite Control Network (AFSCN) controls over 70 spacecraft, performs backup operations for the Shuttle, and supports pre-launch and launch operations for spacecraft, launch vehicles, upper stages and ballistic missiles. These operations are conducted in support of Army, Navy, Air Force, National, and Civil users. NAVSPACECOM's Satellite Control Network (NSCN) operates ten TRANSIT satellites which will phase out by 1996-97; provides control of two FEP platforms; and performs on-orbit support for FLTSAT, which will phase out by 1995-96, and UFO. The NSCN is also scheduled to support GFO 1 beginning in 1996. The Air Force's control network, the AFSCN, has been more manpower intensive than the NSCN due to requirements to control multiple satellite systems with diverse TT&C and payload configurations inherited upon assumption of their current mission in 1987. Planned upgrades to AFSCN will reduce the manpower requirements and provide more automated capabilities. The AFSCN will have sufficient antenna time and capabilities to control all DoD satellite systems (except possibly GFO), once the upgrades are completed and the Naval TRANSIT system retires in 1996. NAVSPACECOM's control mechanism is automated and requires less manpower to control the Naval satellite systems, however it does not have the capability to control all satellites without a major systems upgrade. In 1996, when

the TRANSIT is inactivated, only the GFO system is scheduled to use the Naval satellite control network for TT&C. A Study Group Panel determined there were potential savings of $40M - $50M through the year 2000 by consolidating TT&C.

a. The primary goal is for a single entity to control all bus operations. In 1996, when TRANSIT is inactivated, only the GFO system is scheduled to be controlled by the Naval Satellite Control Network (NSCN). The GFO will be Space Ground Link Segment (SGLS) capable and will therefore be compatible with the AFSCN. However, AFSCN may not meet the Navy TT&C control accuracy requirements for GFO until 1998-99 if current plans for AFSCN upgrade remain on schedule. All other bus operations are scheduled to be under AFSPACECOM and, logically, merging the AFSCN and NSCN operations during the 1996-1999 period has the potential to achieve improvements in efficiency and effectiveness. It could not be determined if the technical capabilities of either the AFSCN or the NSCN were compatible to the extent of full interoperability with all satellites programmed after 1996. However, there were sufficient indications that this was a good possibility. Further, this merger could conserve resources and prevent future redundancies, while assuring maximum support for the combatant commanders. Again, note that there could be exceptions to using a common satellite control network (e.g. for small tactical satellites which may be developed in the future where it may not be operationally or economically feasible to integrate these systems into the common satellite control network).

b. MOP 37 applies the SOM definition to MILSATCOM systems only and several proposals were addressed to consolidated MILSATCOM management. This definition specifies the SOM as "the lead organization responsible for day-to-day operations of a MILSATCOM system. The SOM is normally designated as having primary responsibility for managing the system to maximize the satisfaction of user requirements." SOM was considered to be significant enough to warrant a separate major finding. Further discussion and recommendations are therefore covered under Major Finding 4.

c. Payload control operations are more difficult to merge as most systems have unique payload control requirements. The Study Group believed the key point of focus for payload control in the near term should be USSPACECOM, with the CINC delegating payload control responsibilities as he determines operationally expedient. The Air Force CSOC and the Navy NAVSOC, between the two, presently control most DoD payloads. Logically, merging of these functions under a single component, as their capability is developed/upgraded, could conserve resources, but would also eliminate expertise in the component that lost the function. The Air Force CSOC and the Navy NAVSOC each have capabilities suited for payload control of their satellite systems and are interoperable to a degree. The NAVSOC currently provides some automated capabilities superior to the Air Force's AFSCN. As the AFSCN upgrade proceeds toward IOC, and older Naval satellites are retired,

the AFSCN may have the capability to control all space systems payloads. USARSPACE has the capability to execute DSCS III payload operations through their DSCS Operations Centers (OCs), with the AFSCN as backup. It is important to note that the potential exists for some current and future systems to have the inherent capability for selective payload control. This capability could be used to increase the operational support to warfighters. Having all payload control under USSPACECOM would facilitate delegation of this capability to operational components or CINCs during periods of need.

d. Other space systems.

(1) Some space system operations for specific systems were not addressed. LANDSAT future systems operations were being discussed by a joint working group to determine if the DoD or NASA would operate it. The final determination was that NASA would operate LANDSAT. However, There are Multi-spectral systems that could come to fruition (e.g. High Resolution Multi-spectral Stereo Imager (HRMSI)). Recognizing there are uncertainties in this program, the conclusion of the study group was that should an MSI program continue and its operations be a DoD responsibility, USSPACECOM, as operator of all other DoD operational space systems, is the logical choice to operate MSI systems. USSPACECOM operation would preclude setting up a duplicative operational process and would ensure efficiency and responsiveness to combatant commands.

(2) Per direction of the Joint Staff, compartmented/Black systems operations were not discussed in this study. The rationale was that those systems would eventually follow whatever path was proscribed for the rest of the space systems.

(3) The space systems at Kwajalein, under Space and Strategic Defense Command, are unique in that they perform space system functions on a tasked or corollary basis to their primary function of R&D testing. Upon review, their was no resource savings associated with transferring the operations of the Kwajalein radars to the Air Force, no apparent increase or effect on the support to warfighters, and no unnecessary redundancies. There are negative effects on Army expertise (if the facilities were to be transferred to the Air Force) and costs associated with making the personnel changeovers. The study group felt that the operation of the Kwajalein sensors should remain an Army function.

(4) The USCINCSPACE space surveillance mission is currently supported by all three components. The Air Force Space Surveillance Network (SSN) includes over twenty sensors and sites around the world. The Naval Space Surveillance System , or "fence", operates eight sites along the 33rd parallel in the United States. Both the Air Force and the Navy systems are undergoing upgrades. The Air Force recommended that the Navy "fence" be closed immediately, asserting that the SSN could perform the entire space surveillance function without these sensors. The

Navy vehemently disagreed, as the Air Force proposal was based upon continued operation of the Cavalier radar. The issue is further complicated by SALT and ABM treaty requirements. The Study Group Panel could not determine any cost savings through shutdown of the Navy Fence. The force structure of the satellite surveillance systems is a particularly complex problem. It is generally agreed that the current network of sensors does not meet the requirements for space surveillance. The current systems were developed for different missions and although there is some overlap in surveillance coverage, the functions performed by the sensors and their supporting structure is not necessarily duplicative. There are national and Service missions performed and treaty support responsibilities that further complicate the situation. There may be opportunities to inactivate some of the sensors, but this task was felt to be beyond the charter of the working group. The Study Group agreed that an independent review of the entire space surveillance network, and an assessment of the proper mix of sensors, was in order.

Recommendations

1. Recommendation 1a: **Continue space system R&D at the Joint labs in the direction established by Project Reliance.** The Joint Service cooperative space system lab R&D programs appear to be working well under DoD's Project Reliance. Project Reliance is the joint lab system that fosters interaction among the laboratories and contributes to the definition of joint requirements of combatant forces. The one current exception to this integration is some space systems' R&D under the Army's Space and Strategic Defense Command. The Army should integrate its total space R&D program into the joint lab system.

2. Recommendation 1b. **The current process of requirements definition and concept development for space systems requires improvement to ensure greater Joint and Service influence in decision-making.** These functions are a natural outgrowth of Service and CINC responsibilities in determining what is needed to prosecute their warfighting and training missions. However, with increasing budget pressures and dramatically different post-Cold War strategies, it is essential for all Services to better understand the costs and benefits of requirements. Further, important new defense space capabilities are under the management of separate Agencies and not within normal Service/component channels. This could lead to the development and fielding of systems which do not have capabilities deemed essential by combatant commanders and their components. Further normalization of the Service-component-combatant command relationship for space forces is essential.

3. Recommendation 1c. **Space acquisition should be done in jointly manned System Program Offices (SPO) within the Air Force acquisition system.** The Air Force is the lead service for acquisition in a majority of current and programmed DoD (non-NRO) space systems. It is essential, however, that all services and

agencies with approved requirements have significant involvement in program management to ensure adequate representation of those requirements throughout the development process. With the possibility of converging military and civilian space programs (at least in some areas) integrated DoD representation will be more important. Codification of Service participation in jointly manned SPOs would help ensure adequate participation and help normalize space system acquisition. This recommendation should not prohibit a service from pursuing a space program which supports its warfighters in cases where the Air Force cannot satisfy those service needs.

4. Recommendation 1d. **Merge space system bus operations into a common satellite control network. This should be done as soon as possible, but not later than 1999.** The primary goal is for a single entity to integrate all bus operations. When TRANSIT is inactivated in 1996, the Navy's GFO satellite would be the only satellite bus that the Air Force's common user Satellite Control Network (AFSCN) may not be able to control. The GFO is compatible with the AFSCN, however, the AFSCN may not meet all Navy control requirements until 1998-99 if current plans for AFSCN upgrades remain on schedule. Merging the AFSCN and Navy control network during the 1996-99 period has the potential to achieve improvements in efficiency and effectiveness, while assuring maximum support for the combatant commanders. It should be noted however, that there could be exceptions to using a common satellite control network (e.g. for small tactical satellites which may be developed in the future where it may not be operationally or economically feasible to integrate these systems into the common satellite control network). (See also Paragraph 1h. below)

5. Recommendation 1e. **Multi-Spectral Imagery (MSI) systems operations should come to USSPACECOM for delegation to a component.** Recognizing there are uncertainties in this program, should an MSI program continue and its operations be a DoD responsibility, USSPACECOM, as operator of all other DoD operational space systems, is the logical choice to operate MSI systems. USSPACECOM operation would preclude setting up a duplicative operational process and would ensure efficiency and responsiveness to combatant commands.

6. Recommendation 1f. **The current operating Kwajalein sensors should remain with USARSPACE.** Army operation of Kwajalein sensors is working well. There is no duplication with other space operations and the main mission of these sensors is missile tracking. In addition, there were no resource savings or value added associated with transferring these operations, or the operation of the Navy Space Surveillance Network, to the Air Force. (See also Paragraph 1i. below)

7. Recommendation 1g[1]. **Consolidate payload operations under USSPACECOM.** Currently, DSCS is the only non-Black space system whose payload is not under USSPACECOM; the Air Force Consolidated Space Operations Center and the Navy NAVSOC currently control all non-Black DOD payloads. USARSPACE has the capability to control the DSCS III payload. Future satellites employing on-board processing will facilitate use by warfighting CINCs, but current and projected use requires centralized direction of payload operations. USSPACECOM has a separate initiative under way to resolve this issue.

8. Recommendation 1h[2]. **USSPACECOM conduct a study of merging the AFSCN and NSCN to determine the most efficient and cost effective solution.** The study group could not determine the full capabilities of either the AFSCN or the NSCN to control all satellites. However, there was sufficient indication that, once upgrades were completed, a merging of the systems was a distinct possibility and that such a merging could at least conserve resources and possibly allow wise decisions on space system control site closures should they become necessary.

9. Recommendation 1i[2]. **USSPACECOM conduct an analysis of space surveillance to determine required force structure.** Declining Service budgets, changes in the space threat, and potential and planned upgrades to space surveillance systems could lead to redundancies, inefficient use of limited resources, and/or deficiencies in space surveillance capabilities. With all these changes, it is vital to have an independent baseline to optimize and guide use of current and programmed resources, as well as allow wise decisions on space surveillance site closures should they become necessary.

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1 Note that this recommendation has been combined with recommendation 4a in recommending USCINCSPACE receive COCOM of all DoD space systems.

2 USCINCSPACE has accepted this recommendation and is initiating action to resolve this issue.

APPENDIX D
ANNEX 2

Major Finding 2

Statement of Finding

**Space provides essential support for all Services and CINCs; single Service consolidation would jeopardize joint service/agency expertise and representation.**

Discussion

1. The acceptance of the importance of space systems as combat multipliers in support of military operations was a principal result of Desert Shield/Desert Storm. Although space systems have been in existence for several decades, and used by forces in other operations, the emergence of joint operations, the complexity of those operations, the need for timely, integrated information, and the need to synchronize those operations established the requirements for support that can be uniquely fulfilled by space systems. The Gulf War marked a watershed event in the application of space systems including satellite communication (the backbone for long-haul and intra-theater connectivity - 90% of communications into and out of the theater), navigation (played major role in land and air navigation as well as aerial bombardment), and weather and multi-spectral imagery for planning, executing, and evaluating operations of all the assigned and attached components of CENTCOM. These assets proved their worth to this and all future operations.

2. Consolidating the operations of space systems under a single Service, would reduce the expertise of the other Services and significantly affect the support to the warfighter. To understand this, it is important to discuss the role and functions of the Service components of USSPACECOM.

a. USSPACECOM and its components have dedicated space support and applications teams with the mission to train and educate the Service users of space systems. They also assist the Unified Command staffs and components in planning for and exercising the capabilities of space systems.

b. The functions of the components start with operating their assigned systems. Discussion of operations was covered under Finding 1. However, the distribution of these operations to the various components has been accomplished in an ad hoc

manner. Most operational functions were passed over from the Service R&D organizations that developed them. Some operational functions were assigned as a matter of convenience or expediency.

c. The second function is assisting their respective Services and components of the warfighting commands in the application of space system products. The unique nature of the Services requires that members of a particular Service, trained in the doctrine and operational practices of that Service, be the ones that assist in applying space products within the Service. Space experts from another Service do not have the same instincts and understanding of what is needed or the nuances of how the space product affects different operations of the Service receiving the products. The current applications programs within the Army and Navy components appear to gain synergy from residing within the components and having access to the space system operators, planners, and analysts that comprise the components. The access to USCINCSPACE that the presence of component commands provides to top-level leaders of the Services is an important factor. It completes the lines of communication. It is this horizontal communication at all levels (action level, management level, and senior leadership level) that allows full integration of space and space products into the strategic, operational, and tactical levels of warfare. The component commanders act as a conduit, not only between the component and the CINC, but between the components of the other Unified commands and the senior leadership within the Services.

d. The third function of the components is support of the Services in the planning, programming, and budgeting functions related to space systems requirements, acquisition, and operations. For space systems, the components play a key role in the requirements process, the acquisition process, and are critical to the planning, programming, and budgeting functions of the Services. The Air Force has taken an additional step in designating AFSPACECOM as the Service Major Command (MAJCOM) for all space operations. The recommendation to consolidate the design (which includes acquisition) functions in the Air Force, may reduce the portion of AFSPACECOM that provides that support to the Air Force, but not appreciably as some acquisition would remain for receivers or other equipment specific to the application of space products.

e. The last major function of the components is the role they play in expressing the importance of space systems and their products to the overall operations of their Service. This advocacy role is critical in determining the extent the Service supports the requirements and funding for space systems.

3. Component access to all facets of space, and to all space systems, is important as it opens access to the Service components of the Unified commands. The Study Group consensus was that it took the assets of a component organization to adequately convey the application of the space products to the components of the

warfighters. The Army, Marines, and Navy believe their Service access and expertise in space systems is diminished by each position transferred to the Air Force.

4. The Study Group consensus was that USSPACECOM Service components have in the past provided significant linkage to warfighters, as noted above, and should be retained. The rationale for retaining Service components centers on three issues: (1) the functions of the components within their respective Services; (2) the access it provides all Services to all facets of space and to all space systems; and (3) the access to USCINCSPACE it provides to top level leaders of the Services.

5. The Study group concentrated its review on the space systems operations of the Navy and Army in accordance with the Terms of Reference. These operations account for about 5% of the total space operations. There was a Study Group consensus that an independent review of all space operations (black and white), to include current organizations, current practices and procedures, and policy issues should be conducted to create a "roadmap" for space system acquisition and operational concepts. Space systems, by nature, affect all Services and a Joint perspective would bring in other Service/Agency needs and deficiencies. This review could also validate and legitimize planning efforts currently being developed by USSPACECOM and the component space commands. All elements of the national security space community should also be involved. As a result of this approach, many of the duplications that may exist between white and black space programs could be consolidated to streamline satellite operations and to reduce resource costs. By building a national consensus on these space issues, all agencies could support each other to improve America's space program.

Recommendation

1. Recommendation 2a[3]: **USSPACECOM lead an effort to develop a strengthened Joint space "road map" to guide new space systems and concepts of operation.** There have been numerous reviews of specific space mission areas, such as launch. In addition, the Air Force has had a service specific review of all space mission areas from an Air Force perspective. However, there has been no Joint comprehensive review of all space issues. Thus, their is no overall Joint guidance for use of current space systems, development of new space systems, and their concepts of operations.

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3 USCINCSPACE has accepted this recommendation and is initiating action to resolve this issue.

APPENDIX D
ANNEX 3

## Major Finding 3

Statement of Finding

**Space launch is a significant problem, but is currently being addressed under the Office of Science and Technology Policy Launch Study and the DoD Space Launch Modernization Plan.**

Discussion

The national launch capability is in jeopardy! The launch platforms are based on 1950s technology. The technology base has not been adequately funded and consequently has not kept pace with requirements for space operations. The launch facilities infrastructure have not been funded adequately and consequently have deteriorated. Past R&D and acquisition programs have been canceled due to apparent disconnects in the objectives of the programs based on multiple requirements from both DoD and NASA. USSPACECOM review found that, with the possibility of the convergence of military, civil, and civilian space programs, it is premature to make a recommendation concerning launch.

APPENDIX D
ANNEX 4

## Major Finding 4

Statement of Finding

**A single, central point for space systems operational management is needed.**

Discussion

1. Several proposals were addressed to consolidated MILSATCOM management. The Study Group consensus was that consolidation of MILSATCOM management responsibilities into a single organization would be very beneficial. By consolidating all EHF, SHF, and UHF systems operational management into one organization, better support to the warfighter could be accomplished; and a coherent advocacy for all MILSATCOM support could be made. The split off of DSCS systems manager and SOM to DISA, rather than to a Service and one of the Space Commands, prevents USCINCSPACE from exercising COCOM and OPCON of a vital part of his space forces.

2. While MOP 37 applies the term SOM only to MILSATCOM systems, the Study Group saw the utility of applying a similar definition to all space systems management, rather than limited to MILSATCOM. This definition would specify the SOM as "the lead organization responsible for day-to-day operations of a space system."

3. The Study Group focused on the issue of consolidating all SOM used in the context definition in paragraph 2 above, at AFSPACECOM; however, the consensus was that (a) consolidation at the AFSPACECOM component level in the near term did not appear to be cost effective in terms of personnel and resource savings; (b) consolidation of the space systems management at Unified Command level appears more appropriate and has potential to conserve resources, provide improved support to the other Unified commands, and retain Joint/Service expertise; (c) given (b), delegation of DSCS SOM to USARSPACE is consistent with their current mission and operational DSCS experience; and (d) the key point of focus should be USSPACECOM for all DoD space systems operational support. Consolidation of SOM at AFSPACECOM does not appear to be cost effective at this time because of the cost involved in transferring the Navy operations to AFSPACECOM. The AFSCN would require immediate upgrade or the Air Force would have to man the Naval facilities. The Study Group consensus was that consolidation of SOM to a single Service in the near term was not a good option. Nevertheless, consolidation of

space systems management at the Unified level, with appropriate delegation of SOM down to all components, was an attractive option. Day-to-day operations at the Service Component level under the auspices of the Unified Command is in keeping with Title 10 of the US Code regarding combatant command (COCOM) authority and related Service responsibilities, and allows USCINCSPACE the flexibility to employ his forces as he sees fit. This recommendation preserves the "supporting to supported CINC" concept. It provides the regional Unified command a single contact point for all space system support. It also maintains Service and Joint expertise within the three components managing the systems that primarily support their Service forces. However, to realize the potential resource savings and support enhancements, some form of a consolidated space system operational management scheme within USSPACECOM appears necessary. Specific SOM should be delegated down to the appropriate space command components in keeping with OPCON of those forces, and the capability of the component to perform the management function. Consolidation of DSCS systems operational management to USSPACECOM, with USARSPACE appearing best equipped to be delegated DSCS SOM, assigns both COCOM and OPCON of DSCS systems in the appropriate place. This assessment is also based on USARSPACE's current operational experience with operations and maintenance for DSCS payload and network control.

4. To retain consistency, it appears appropriate to consolidate SOM for national systems under USSPACECOM with OPCON appropriately delegated in accordance with system application.

Recommendations

1. Recommendation 4a[4]. **Consolidate space systems operational management under USSPACECOM.** System operational management for DSCS is also handled differently than other non-black space systems. Consolidation is consistent with the USCINCSPACE's Title 10 and Unified Command Plan (UCP) responsibilities, and will conserve resources while providing improved support to Unified Commands.

2. Recommendation 4b. **The Joint Staff should review the System Manager designation for Defense Satellite Communications System (DSCS) (currently DISA).** System managers exercise authority over the long range planning, direction, and functions necessary for support of weapons systems. Consolidating this function under USCINCSPACE will eliminate the stovepipe management structure for this system and allow a system of systems approach for Military Satellite Communications. It also resolves conflicts with COCOM/OPCON responsibilities over a vital space system.

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[4] Note that this recommendation has been combined with recommendation 1g in recommending USCINCSPACE receive COCOM of all DoD space systems.

APPENDIX D
ANNEX 5

**Major Finding 5**

Statement of Finding

There are deficiencies in the application of space systems in the support of warfighters.

Discussion

1. Operation Desert Storm was a watershed event which convinced the Services that there was significant benefit to be gained in improving the area of application of space systems support to the warfighters. The Army and Navy components were able to react to the needs of their respective CENTCOM components, but recognized increased emphasis was appropriate in the already established programs. The Air Force recognized that it had a major deficiency in exploiting space products and approved the recommended solution of the Blue Ribbon Review of the Air Force in Space in the 21st Century Panel. This panel recommended the creation of a Space Warfare Center, similar to their Air Force Fighter Weapons Center and others in the Air Force structure as an Air Force priority to address the deficiency.

2. The Air Force subsequently tasked AFSPACECOM to develop plans for the Space Warfare Center at the NTF. As indicated above, AFSPACECOM recently designed and opened a Space Warfare Center in the National Test Facility (NTF) at Falcon Air Force Base.

3. Space applications are inherently joint and space information is crucial to all warfighters. A Joint Space Warfare Center appears to have significant potential for improving support to the warfighting CINCs by integrating new and existing applications, and assisting in their implementation within Joint doctrine and OPLANS. A Joint operation should take advantage of the experience already existent in the space components. The synergy of Joint ideas applied to TENCAP activities initiated within the Services, could provide a fully integrated approach to application of space support capabilities. Locating the Joint Space Warfare Center at the NTF could open the connectivity with the other Unified Commands via the Defense Simulations Internet for simulations and other uses.

Recommendations

1. Recommendation 5a[5]: **USSPACECOM actively support Component efforts in exploiting space systems in support of warfighters (e.g., space warfare centers).** The Study Group recognizes space applications are inherently joint and support from space systems is crucial to all warfighters, regardless of Service. Such centers or teams should take advantage of the Services' experience and expertise in this area.

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5 USCINCSPACE has accepted this recommendation and is initiating action to resolve this issue

# APPENDIX E

## DISSENTING OPINIONS

The attached dissenting opinions were submitted by the Action Officers involved in this Roles and Missions Study Group.

NOTE: DURING THE COURSE OF THE USCINCSPACE REVIEW OF THIS DOCUMENT MANY OF THE CONCERNS EXPRESSED IN THE FOLLOWING DISSENTING OPINIONS WERE ADDRESSED. CONSEQUENTLY, IT IS REQUESTED THAT READERS REFER BACK TO THE APPROPRIATE SECTION OF THE REPORT PRIOR TO FORMING ANY CONCLUSIONS BASED ON THE DISSENTING OPINIONS.

APPENDIX E
ANNEX 1

## USAF DISSENTING OPINION

Finding 1. Recommend rewriting Finding #1: "The Air Force is currently the primary agent for design, launch, and operation of space systems. The Study Group found that design, launch and operation of space systems should be consolidated under the Air Force, with the exception of DSCS OC operations, which will be performed by the Army."

Rationale: Although the Study Group "found no compelling arguments", compelling reasons do exist, as noted by the Roles and Missions Report itself: Creation of a single point of contact for space support (i.e., more responsive support for combat and combat support forces); elimination of unnecessary, redundant systems and capabilities; elimination of unnecessary overhead; and creation of standardized, cost effective systems. The question should no longer be whether there's a compelling reason to consolidate; it should be "Is there a compelling reason not to consolidate?"

The majority of DoD space systems design, launch, and operations are already consolidated in the Air Force. The Air Force routinely provides critical space products and support to the other Services. Given the Air Force's proven performance, there is no factual basis for predicting a lack of Air Force support. Some Army and Navy representatives point to the Air Force's recent, critical look at whether MILSTAR is the most cost effective materiel solution as an example of lack of support for their requirements. But, the periodic review of requirements and programs is called for by DoDI 5000.2. It is a responsible management practice to continue seeking cheaper alternatives for meeting requirements, particularly since defense dollars are dwindling.

Finding 4. This finding should be rewritten: "Following single Service consolidation, joint Service/Agency expertise should be maintained through Service involvement in the operational requirements definition process and through the aggressive application of space assets to enhance their respective Services' warfighting capability."

Rationale: As written in the draft report, this Finding is somewhat emotional as it has no basis in fact. Consolidation of design, launch and operation of space systems does not preclude the involvement of the other Services, nor their

resulting expertise. The Air Force does not seek to isolate itself in the knowledge and application of space systems. Instead, the Air Force is seeking elimination of stove-piped space systems.

The other Services must stay involved in space, maintaining their expertise concerning what space support is available, the application of space support and advocacy for their operational requirements. These functions will be accomplished by all Services in the Space Warfare Center. The Services, rather than having specialized space personnel, could treat space as just another asset to be considered when doing operational plans and requirements. Again, the Air Force is merely seeking to consolidate design, launch and operation of the space systems on behalf of all DoD, not to dictate the use of Space to the other Services.

Recommendation 1a: Make directive in nature. Rewrite: "Consolidate all DoD space bus operations on the Satellite Control Network by end of FY96

Rationale: As originally written, the second sentence leaves the issue open to discussion of if and when consolidation would take place. Also, by not directing consolidation on one satellite control system or another, the study is leading to large expenditures of time and money to make two disparate systems interoperable per Defense Planning Guidance and USCINCSPACE's Integrated Satellite Control MNS 004-93. Defense Planning Guidance directs the Services to "...provide for integrated satellite control." The MNS, validated and approved by USCINCSPACE and CSAF, states in part:

"Current satellite infrastructure has evolved independently, system by system, over the previous years with an emphasis on peacetime operations. As a result, that infrastructure is fragmented, fragile, and vulnerable. Further, there are inefficiencies within space systems, and in some cases, inability of space systems to operate with each other to provide mission support in a timely and effective manner... Any interruption of on-orbit support could lead to loss of space based support to the combatant commands."

By allowing the existence of two independent satellite control systems and the duplication of TT&C capabilities, the Study Group recommendation will lead to large expenditures of DoD funds to fix the problems cited in the ISC MNS. That money and effort can be saved if one system is eliminated. Efforts to make the Navy and Air Force systems interoperable and the continued expenditures to maintain them that way appear even more wasteful when one sees that by FY96, the Navy's system will only be responsible for the operation of GFO, a one satellite system that requires minimal operations. The Air Force Satellite Control network already operates Navy spacecraft, and provides critical mission data to Navy users. It should now take on GFO operations, allowing the Navy's otherwise unused network to be closed, and eliminating the interoperability problems and costs.

Recommendation 1c: Rewrite to read: "All satellite operations must be compatible with a common satellite control network."

Rationale: Independent space system procurement by separate services is unnecessary and redundant, (i.e., wasteful) since the Air Force already performs this function for other Services, and for 90% of all DoD space systems.

In addition, as currently written, this recommendation is a "Catch-22" for the Air Force: The motivation for this recommendation is stated on page 15 of the draft report:

> "An overall caveat was that the other Services, the Navy in particular, felt they needed the option to go to a commercial contractor until the Air Force was able to demonstrate capacity to adequately and efficiently fill their space system design, acquisition, and launch needs. This position was forged from the Army and Navy experiences with GPS, MILSTAR, and GFO."

If the Navy and others go to contractors until the Air Force demonstrates an ability to perform according to the other Service's criteria, the Air Force will never have the opportunity for a demonstration. Such concerns over the ability or intent of Air Force to do the job are unfounded. As pointed out in the Air Force's dissenting opinion on Finding 1, the Air Force supports all Services (as well as National and Civil users) today, and can do so more effectively through consolidation in the future.

Furthermore, if this draft recommendation stands, who will decide whether the Air Force has demonstrated the "capacity to adequately and efficiently fill...space system design, acquisition and launch needs?" Without objective criteria, this caveat represents a loophole for the other Services to continue operating independent systems.

## APPENDIX E
## ANNEX 2

## USN DISSENTING OPINION

Finding 2: There is no central point of contact for space systems operational management.

Background: Joint Chiefs of Staff Memorandum of Policy Number 37 (CJCS MOP-37) provides general guidance on the planning and management of MILSATCOM systems. It provides for System Managers (usually Services) and tasks them to select System Operational Managers (SOM) for the appropriate systems. The Roles and Missions Study extends the MOP-37 SOM definition to all space systems.

The Chairman's Roles and Mission report raised the issue of DISA management of DSCS. USSPACECOM took the issue onboard, challenging DISA's MOP-37 assigned SOM authority, which they believe conflicts with USSPACECOM COCOM authority. There were no other white world systems presented where COCOM/SOM was an issue.

Discussion: SOM (if MOP-37 outline is followed) has 16 separate taskings which generally divide into two key functional areas - satellite management (COCOM - telling the force provider where to go) and user/payload management (how the force provider employ's/fights with the system).

- Satellite management consists of planning and managing satellite systems, directing changes in the systems, anomaly resolutions, and any actions impacting the health and welfare of the satellite bus. USSPACECOM maintains satellite bus management (i.e., COCOM) of all satellite systems through its Components with the exception of certain DSCS functions and thus is the "central point of contact" for satellite management.

- User/payload management deals with managing the user resources (i.e. bandwidth, altimetry data, imagery etc.) that the satellite System supports or provides. Although there is no single point of contact for user management at the DoD level, the current structure does aim to centralize the management with the lead user community or with the Theater CINC.

Centralization for user/payload management away from the Theater CINCs or principal user would detract from system effectiveness and is not consistent with the intent of the definitions being used.

The loose merging of complex definitions or SOM and COCOM and the various understandings of those definitions, has led to confusion and a generalized recommendation. A problem with DSCS has been extended to a universal issue.

Recommendations: Change as follows:

2a: Continue to support user/payload SOM functions under the Theater CINC or primary user.

2b: Continue to support satellite bus SOM functions under USSPACECOM COCOM (Component execution).

2c: Perform an independent review of DSCS management to assure proper chains of command exist for appropriate functions with an emphasis on supporting the user.

Finding 4: If there is a single Service consolidation, then joint Service/Agency expertise and representation are in jeopardy, and several subsequent actions will be required.

Concurrence: Concur totally with the intent of the Finding; however, do not concur with the structure of the discussion. As written, this Finding and associated discussion assumes a conclusion and attempts to backfit a problem and solution.

Dissenting Opinion: The finding addresses Services, yet the discussion centers on Components. The underlying issue is the ability of the Services to ensure their space support needs are satisfied, not the validity of the Components. The Chairman's report has already recognized the importance of all the Components. The tasking for this study group was to consider a realignment of functions between the Services. This overall discussion appears to be totally unnecessary.

The discussion concerning equity in the planning, programming and budgeting, and acquisition functions are only briefly addressed. This is the area of greatest Service concern. Consolidation of space beyond what presently exists, puts our warfighters at risk. This assertion is based on history; Air Force stewardship of space support to warfighters is not encouraging, GPS, MILSTAR, DMSP and GFO are cases in point. The Services need more than a "trust me," yet nothing better is offered. If this section is retained, it should make meaningful recommendations.

Recommendations:

1. Delete Finding 4 as a separate section; include appropriate portions of "Status" and "Discussion" sections under Finding 1.

2. Renumber Recommendations 4a and 4b under Finding 1.

3. Move Recommendation 4c under Finding 5, and rewrite as "USCINCSPACE commission a review of AFSPACECOM missions and functions."

## APPENDIX E
## ANNEX 3

## USA, USN, AND USMC DISSENTING OPINION

Major Finding 1

While there was a consensus that the Air Force should be the focal point for acquisition of space systems, the other Services, the Navy in particular, felt they needed the option to develop space systems independently until the Air Force was able to demonstrate the capacity to adequately and efficiently fill their space system design, acquisition, and launch needs. This position was forged from the Army and Navy experiences with GPS, MILSTAR, and GFO. However all agreed that, should this option be exercised, the system had to be compatible with a common satellite control network.

The Service representatives, therefore, offered the following recommendation be added in Major Finding 1:

Recommendation: Services retain the authority to procure space system support independently if necessary. However, all resulting operations must be compatible and fully interoperable with a common satellite control network.

APPENDIX E
ANNEX 4

## DISA DISSENTING OPINION

Who should be the focal point for Military Satellite Communications (MILSATCOM)? This issue has existed between USSPACECOM and the Defense Information Systems Agency (DISA) for some time. All agree there is a need to migrate management of diverse MILSATCOM systems into a central management sphere, yet no consensus can be reached as to where it belongs. USSPACECOM has argued that all systems (including communications) utilizing elements orbiting the earth should be managed by its components, as part of a "force enhancement" mission granted them by Title 10, USC. The logic behind the "force enhancement" idea envisioned a day when satellites would be managed like soldiers, being dispatched to serve over specific crisis regions of the world without concerns of the satellites being encumbered with other global communications missions.

Unfortunately, we have not reached the day when satellites can be managed in that fashion, and due to declining budgets, we probably never will. Instead, we retain the same or similar MILSATCOM systems we have had for over a decade, all of which are tied to successful management structures that efficiently support a global communications infrastructure, including warfighter support. It is the Defense Satellite Communications Systems (DSCS) which has received USSPACECOM's issue focus, since DISA manages DSCS and is not a component of USSPACECOM.

The DISA is chartered with gaining efficiencies through centrally managing the DoD communications infrastructure. As a warfighting support agency, DISA extends this infrastructure directly to warfighting forces deployed anywhere in the world. The DSCS system is core to this communications infrastructure and in supporting these deployed forces. Established working relationships allow DISA to manage the "system-wide" DSCS, while satellite orbital operations are conducted by Air Force Space Command, and communications network operations centers are operated by the Army. DISA's central management focus ensures global telecommunications integration of the DSCS with ground based telecommunications systems. Thus, DISA provides the "one-stop-shop" for DoD communications customers in the same manner as AT&T and other commercial carriers provide communication services for private industry. DISA has proposed to broaden its warfighter support to include other MILSATCOM systems supporting tactical deployments, particularly

the UHF and EHF systems. With established field support elements already at the warfighting CINC locations, focused and working communications issues, DISA is the logical activity to assume this responsibility.

In resolving this issue, our primary focus must be support to warfighting forces, yet we believe the proposed solution will further burden the warfighting CINCs. Dividing successful DISA communication support structures to establish USSPACECOM as a long haul communications provider will mean increased coordination problems for the CINCs. The normal relationship between the warfighting CINC staffs and the co-located DISA field element will be weakened. The process of obtaining communications support and sustaining communications operations will be more complicated and involve more activities. As a result, we believe whatever benefits are gained by sub-optimizing MILSATCOM under the USSPACECOM proposal will be negatively offset by making the total communications problem more complicated. The USSPACECOM leadership role in launch, operating and protecting orbital assets is unquestioned; however, we believe the established communications infrastructure should perform the functional management of the MILSATCOM communications resources.